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OFFICE OF THE  
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March 13, 1998

David Waddell, Executive Secretary  
Tennessee Regulatory Authority  
460 James Robertson Parkway  
Nashville, TN 37243-0505

**VIA HAND DELIVERY**

Re: BellSouth Telecommunications, Inc.'s Entry Into Long Distance (InterLATA) Service in  
Tennessee Pursuant to Section 271 of the Telecommunications Act of 1996; Docket No.  
97-00309

Dear Mr. Waddell:

Enclosed please find the original and 13 copies of Intermedia Communications, Inc.'s Proposed  
Performance Measures filed in conformity with the Authority's Order of March 6, 1998.

Sincerely,



LaDon Baltimore  
LDB/dcg

cc: Enrico C. Soriano, Esq.  
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**BEFORE THE  
TENNESSEE REGULATORY AUTHORITY  
NASHVILLE, TENNESSEE**

REC'D TN  
REGULATORY AUTH.  
'98 MAR 13 AM 11 28  
EXECUTIVE SECRETARY

In Re: BellSouth Telecommunications, Inc.'s )  
Entry into Long Distance (InterLATA) )  
Service in Tennessee Pursuant to ) Docket No. 97-00309  
Section 271 of the Telecommunications )  
Act of 1996 )

**To the Authority:**

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**PROPOSED PERFORMANCE MEASURES OF  
INTERMEDIA COMMUNICATIONS INC.**

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**INTERMEDIA COMMUNICATIONS INC.** ("Intermedia"), through its undersigned counsel, hereby respectfully submits its Proposed Performance Measures, in conformity with the Authority's Order, dated March 6, 1998.<sup>1</sup> In support thereof, Intermedia states as follows.

**I. INTRODUCTION**

The federal Telecommunications Act of 1996 (the "1996 Act") obligates incumbent local exchange carriers ("ILECs") and, thus, the Bell Operating Companies ("BOCs"), including BellSouth Telecommunications Inc. ("BellSouth"), to provide requesting carriers with interconnection, access to unbundled network elements ("UNEs"), and resale services. In fulfilling these interconnection, unbundling, and resale obligations, the BOCs will perform a

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<sup>1</sup> Order Establishing Format of Technical Workshop on Performance Measures and Standards (Mar. 6, 1998).

variety of wholesale functions for competitors, many of which the BOCs also perform in providing retail services.

The ability to detect discrimination in the BOCs' performance of these functions is necessarily dependent upon the establishment of performance measures and standards that will permit competing carriers and state and federal regulators to measure BOC performance. The development of appropriate measures and standards is thus critically important to determining whether the local exchange market is irreversibly opened to competition, and that there are no artificial barriers to entry into the local exchange market. Similarly, the establishment of performance measures and standards will ensure that, once the BOCs are allowed entry into the in-region, interLATA market, the local market will remain open, and that backsliding will not go undetected. Clearly, an obligation to perform in a nondiscriminatory manner is meaningless if no provisions exist to monitor performance and ensure ongoing compliance.

## **II. INTERMEDIA PROPOSES A MODIFIED ALTS SERVICE QUALITY MEASUREMENTS**

Intermedia supports and proposes the adoption of the Association for Local Telecommunications Services ("ALTS") Service Quality Measurements (hereinafter, "ALTS Standards"), a copy of which is attached hereto and incorporated herein by reference as Exhibit A, with certain modifications. The ALTS Standards are based upon, and supplements, the Local Competition Users Group ("LCUG") Service Quality Measurements (hereinafter, "LCUG Standards"), a copy of which is attached hereto and incorporated herein by reference as Exhibit B. The ALTS Standards, as modified by Intermedia, do not supplant the LCUG Standards, but rather are intended supplement them to reflect those measurements and categories that are of special interest to the members of ALTS, of which Intermedia is one. Indeed, sections of the

ALTS Standards had been lifted directly out of the latest LCUG Standards, Version 6.1, dated September 26, 1997, thereby reinforcing ALTS's desire to build a common performance measurement foundation, rather than reinvent a new one.

#### **A. The LCUG Standards**

The LCUG Standards measure the ILECs' performance for all the essential operations support systems ("OSS") categories, including:

- preordering
- ordering and provisioning
- maintenance and repair
- network performance
- unbundled elements
- operator services and directory assistance
- system performance
- service center availability
- billing

The preordering standards measure the average response time for preordering information. The ordering and provisioning standards provide measurements for order completion intervals, order accuracy, order status, and held orders. The maintenance and repair standards measure time to restore, frequency of repeat troubles, frequency of troubles (troubles per 100 lines), and estimated time to restore met. The billing standards seek to measure timeliness of billing record delivery, and accuracy of billing records. The operator services and directory assistance standards measure speed to answer. The network performance standards measure network performance

parity. The availability of, and performance of, network elements are measured by the interconnect/unbundled elements and combinations standards. Finally, systems availability and center responsiveness are also measured.

### **B. The ALTS Standards**

As stated previously, a fundamental requirement of the ALTS Standards is to adhere as much as possible to the format of the LCUG Standards, Version 6.1. The ALTS Standards recognize and accept the basic measurement foundation established in the LCUG Standards, Version 6.1. However, the ALTS Standards modify certain portions of the LCUG Standards. For example, the ALTS Standards modify the LCUG Standards' "Order Provisioning" section to include additional measurements, such as "Percent Customer Desired Due Date Met," "Average Completion for INP Coordinated Orders," and "Percent of INP Coordinated Orders with Disconnection, Loop Provisioning, and NP Done within 5 Minutes of Each Other." The "Percent Customer Desired Due Date Met" measures the ILEC performance against what the competitive local exchange carrier ("CLEC") customer requested versus the ILEC commitment made based on the ILEC's own internal requirements which do not necessarily consider customer needs. The "Average Completion for INP Coordinated Orders" and "Percent of INP Coordinated Orders with Disconnection, Loop Provisioning, and NP Done within 5 Minutes of Each Other" monitor the quality of work done by the ILEC when physical connection and software updates must be completed at the same time to prevent customer outage and poor service.

In addition, the ALTS Standards include the following supplemental measurement criteria:

- Network Performance Measures network interconnection performance.

- **Emergency Services**                      Measures the timeliness of updating the 911/E911 databases, the accuracy of the 911/E911 databases, the provisioning of 911/E911 trunks, and the system availability to the Master Street Address Guide ("MSAG").
- **Collocation Provisioning**              Measures physical and virtual collocation commitments met.

Finally, the ALTS Standards add the following standard service groupings to the LCUG service groupings: ISDN Basic Rate ("BRI"), ISDN Primary Rate ("PRI"), Unbundled DS3 loop, network interface device ("NID"), direct inward dialing ("DID"), remote call forwarding ("RCF"), and Signaling System 7 ("SS7").

### **C. Intermedia's Proposed Modifications/Additions to the ALTS Standards**

The ALTS Standards adequately address the concerns of many CLECs. However, CLECs who provide data services in addition to traditional voice services, such as Intermedia, have needs that are unique to them. In particular, Intermedia believes that the ALTS Standards should be expanded to address the provision of data services. Specifically, the ALTS Standards should be expanded to include measurements for resold frame relay/Synchronet and other simple and complex services, all unbundled data network elements, including but not limited to, four-wire digital circuits and subloop elements. This list should be expanded as other data UNEs capable of supporting data services are developed and introduced. Because it is difficult to predict what particular services and UNEs might become available in the future, the measurements ultimately adopted should have sufficient flexibility to encompass new applications.

Moreover, standards and measurements that relate specifically to the performance of BellSouth's Local Carrier Service Center ("LCSC") are appropriate. Studies conducted

previously by BellSouth's own paid consultants revealed that BellSouth's LCSC operations were substandard, inefficient, and otherwise dysfunctional. In this regard, Intermedia recommends that BellSouth should be required to provide data concerning "first time quality" and "orders pending on the questionable activity report." "First time quality" measures the ability of the service representative to process an order, error-free. "Orders pending on the questionable activity report" ensures that orders are cleared on a timely basis if and when they have errors. In addition, to the extent not already reflected in either the ALTS Standards or the LCUG Standards, BellSouth should be required to provide the following additional data: order process duration (measured in hours from the point of receipt to issuance of firm order confirmation); percent of Local Service Requests processed within 48 hours; percent of calls answered within 16 seconds; percent of calls abandoned; and average number of times clarified orders are submitted before being processed.

Finally, Intermedia believes that BellSouth should be required to provide the Commission and the CLECs with reports showing BellSouth's performance. While the level of disaggregation for reporting purposes will necessarily depend upon the needs of individual CLECs and regulators, the reports should be sufficiently specific to permit conclusions concerning BellSouth's performance to be drawn.

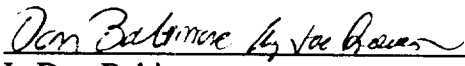
### **III. CONCLUSION**

The ALTS Standards (which supplement the LCUG Standards), as modified by Intermedia, provide the necessary measurements to gauge the adherence of the ILECs to their interconnection, unbundling, and resale obligations. Applied in the context of local competition in the State of Tennessee, the ALTS Standards, as modified, will permit the Authority and BellSouth's competitors to effectively monitor BellSouth's compliance with the provisions of the 1996 Act and applicable state law.

**WHEREFORE**, Intermedia respectfully requests that the Authority adopt the ALTS Standards, as modified by Intermedia.

Respectfully submitted,

**INTERMEDIA COMMUNICATIONS INC.**

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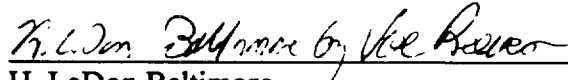
**Its Attorneys**

Dated: March 13, 1998



## CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and correct copy of the foregoing has been forwarded via U. S. Mail, first class postage prepaid, to all persons listed below this 13th day of March, 1998.

  
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**APPENDIX A**  
**LCUG SERVICE QUALITY MEASUREMENTS**

# **LOCAL COMPETITION USERS GROUP (LCUG)**

## **SERVICE QUALITY MEASUREMENTS (SQM)**

September 26<sup>th</sup>, 1997

Membership: AT&T, Sprint, MCI, LCI, WorldCom

Version 6.1

# Service Quality Measurements

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# Service Quality Measurements

## Introduction

### Background:

On August 8, 1996, the Federal Communications Commission released its First Report and Order (the Order) in CC Docket No. 96-98 (Implementation of the Local Competition Provisions of the Telecommunications Act of 1996). The Order establishes regulations to implement the requirements of the Telecommunications Act of 1996. Those regulations are intended to enable potential competitive local exchange carriers (CLECs) to enter and compete in the local telecommunications markets. One requirement found to be "absolutely necessary" and "essential" to successful entry is that the incumbent local exchange carriers (ILECs) provide nondiscriminatory access to their operations support systems (OSSs). Many variations of interim OSS GUIs (graphic user interfaces), and electronic gateways have been or are being offered by the ILECs. These interim systems have not provided the capability for the CLECs to provide the same customer experience for their customer as compared to what the ILECs do for theirs. The timeliness and accuracy of information processed by the ILEC for pre-ordering, ordering and provisioning, maintenance and repair, unbundled elements, and billing have not, to date, been satisfactory. The service delivery problems exist regardless whether total service resale or unbundled elements are utilized. Final solutions for application-to-application real time system interfaces are evasive because of the complexity, the diversity of committed implementation schedules and lack or inconsistent use of industry guidelines.

On February 12, 1997 the Local Competition Users Group (LCUG) issued their "Foundation For Local Competition: Operations Support Systems Requirements For Network Platform and Total Services Resale. The core principles contained in the document are: Service Parity, Performance Measurement, Electronic Interfaces, Systems Integrity Notification of Change, and Standards Adherence. Each of these are significant to ensure CLEC customers can receive at least equal levels of service to those the ILEC provides to its own customers. The LCUG group indicated that it was essential that a plan be developed to measure the ILECs performances for all the essential OSS categories (e.g. pre-ordering, ordering and provisioning, maintenance and repair, network performance, unbundled elements, operator services and directory assistance, system performance, service center availability and billing). To that end, an LCUG sub-committee was formed with a charter to address measurements and metrics. The subcommittee jointly developed a comprehensive list of potential measurements which was developed and shared among the team members for review. Each committee member researched an assigned measurement group for the purpose of proposing consolidation and other modifications. The subcommittee discussed each measurement and considered existing regulatory requirements (minimum service standards) as well as good business practices in arriving at the recommended measurement and extent of detail to be reported. The service quality measurement (SQM) goals, or benchmark levels of performance, were established to provide a nondiscrimination standard in the absence of directly comparative ILEC results. Establishing precise benchmark level was difficult because the ILECs have been reluctant to share actual results. The goals, therefore, were based upon best of class and/or an assessment of the necessary performance to support a meaningful opportunity for CLECs to compete. The SQM goals may change if the ILECs share historical and/or self report current results.

### Measurement Plans:

A measurement plan, capable of monitoring for discriminatory behavior, must incorporate at least the following characteristics; 1) it permits direct comparisons of the CLEC and CLEC industry experience to that of the ILEC through recognized statistical procedures, 2) it accounts for potential performance variations due to differences in service and activity mix, 3) it measures not only retail services but experiences with UNEs and OSS interfaces, and 4) it produces results which demonstrate the nondiscriminatory access to OSS functionality is being delivered across all interfaces and a broad range of resold services and unbundled elements. The measures employed must address availability, timeliness of execution, and accuracy of execution.

# Service Quality Measurements

## Introduction

It is essential that the CLECs be able to determine that they are receiving at least equal treatment to that ILECs provide to their own retail operations or their local service affiliates. Benchmarks and performance standards that are voluntarily adopted by the CLECs and ILECs, or ordered by commissions, need to clearly demonstrate that new service providers are receiving nondiscriminatory treatment.

This document discusses measurements at both a summary level (Executive Overview) and at a level suitable for starting the implementation process (Measurement Detail)



# Service Quality Measurements

## Business Rules

### **Test for Parity:**

#### **ILEC Reports Results For Own Local Operations:**

Both the average (mean) result and the variance of the measurement result for the ILEC and the CLEC should be compared to establish that the CLEC result is no worse than the ILEC's result.

#### **ILEC Results Are Not Reported Or Results Are Incomplete:**

The mean result for CLEC must be compared and a determination made that the CLEC result is no worse than the benchmark performance level. The benchmark performance to be employed in the comparison is the result produced via special study by an ILEC (as described below) or, in the absence of such a study result, the LCUG default performance benchmarks.

### **Benchmarking Study Requirements:**

A special study may be optionally utilized by the ILEC to establish the benchmark performance level whenever a reasonable ILEC retail analog does not exist. When the ILEC performs a benchmarking study, it must be based upon equivalent experiences of that ILEC and conform to the following minimum requirements: (1) a benchmark result is provided for each reporting dimension described for the measurement; (2) the mean, standard error, and number of sample points are disclosed for each benchmark result; (3) the study process and benchmark results may be subjected to independent audit; (4) update to the benchmark result will be submitted whenever changes may reasonably be expected to impact the study results or six months has elapsed since the conduct of the prior study, whichever occurs earlier. Unless directly ordered by the appropriate regulatory commission, no ILEC benchmark will be utilized in lieu of an LCUG benchmark without mutual agreement of the CLECs impacted by use of the benchmark

### **Reporting Expectations and Report Format:**

CLEC results for the report month are to be shown in comparison to the ILEC result for the same period with an indication, for each measurement result, where the CLEC result is lesser in quality compared to the ILEC (based upon the test for parity described in the preceding). Such detailed results will be reported only to the CLEC unless written permission is provided to do otherwise. Furthermore, reporting to the individual CLECs should include, for each measure, a representation of the dispersion around the average (mean) of the measured results for the reporting period (e.g. percent of 1-4 lines installed in the 1<sup>st</sup> day, 2<sup>nd</sup> day, 3<sup>rd</sup> day, and > 10 days, etc.) In addition to providing the preceding detailed results, the ILEC must also supply, to each interested CLEC, a report showing the ILEC performance for each measure in comparison to both CLEC industry in aggregate and the performance delivered to any affiliate(s) of the ILEC.

### **Delivery of Reports and Data:**

Reports are to be made available to CLEC by the 5th scheduled business day following the close of the calendar report month. If requested by the CLEC, data files of raw data are to be transmitted by the ILEC to the CLEC on the 5th scheduled business day pursuant to mutually acceptable format, protocol and transmission media.

### **Geographic Reporting:**

Measurement data should be reported on a natural geographic area that allows prudent operational management decisions to be made and does not obscure actual performance levels. Presently ILECs report at levels as discrete as individual exchanges (Central Office) to as aggregated as the Region level. The recommended default level of reporting is the MSA although further detail should be required where it improves the ability to make meaningful comparisons..

# Service Quality Measurements

## Business Rules

### **Verification and Auditing:**

By joint request of more than one CLEC, an audit of the data collecting, computing and reporting processes must be permitted by the ILEC. The ILEC must also permit an individual CLEC to audit or examine its own results pursuant to terms no more restrictive than those established between the CLEC and the ILEC in the interconnection agreement for the operating area underlying the reported results.

During implementation of the measurement reporting, validation of results of data collection, measurement result computation and report production will be necessary. The ILEC must permit such validation activities and not subsequently contend that an individual CLEC has undertaken an audit either under the terms of the measurement plan or pursuant to the terms of the CLEC's interconnection agreement.

### **Adaptation:**

Technology, market conditions and industry guidelines/standard continue to evolve. LCUG reserves the right to modify the content of this document, adding, deleting or making modification, as necessary to reflect such changes.

# Service Quality Measurements

## Executive Overview

### This Executive Overview section:

- Provides a summary of the detailed requirements
- Enables a quick overview and understanding of the proposed LCUG measurements
- Summarizes the Business Implications associated with each measurement
- Accommodates a target audiences who have a need to know about the measurements but not the specific details

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# Service Quality Measurements

## Executive Overview

### Pre-Ordering (PO)

<b>Function:</b>	
Average Response Interval for Pre-Ordering Information	
<b>Business Implications:</b>	
<ul style="list-style-type: none"> <li>The CLEC customer service agent must establish such basic facts as availability of desired features, likely service delivery intervals, the telephone number to be assigned and the validity of the street address while the customer (or potential customer) is on the phone</li> <li>It is critical that the CLEC be perceived as equally competent, knowledgeable and fast as an ILEC customer service agent</li> <li>This measure is designed to monitor the time required for CLECs to obtain the pre-ordering information necessary to establish and modify service</li> <li>Comparison to the ILEC results allow conclusions whether an equal opportunity exists for the CLEC to deliver a comparable customer experience (compared to the ILEC) when a retail customer calls the CLEC with a service inquiry</li> </ul>	
<b>Measurements:</b>	<b>Results Detail:</b>
<ul style="list-style-type: none"> <li>Average Response Interval for Pre-Ordering Information</li> </ul>	<ul style="list-style-type: none"> <li>Major Pre-ordering Query Type</li> </ul>

### Ordering and Provisioning (OP)

<b>Function:</b>	
Order Completion Intervals	
<b>Business Implications:</b>	
<ul style="list-style-type: none"> <li>When the CLEC commits to a due date for service delivery, the customer plans for service availability at that point and will be dissatisfied if the requested service or feature is not delivered when promised</li> <li>The "average completion interval" measure monitors the time required by the ILEC to deliver integrated and operable service components requested by a CLEC, regardless of whether services resale or unbundled network elements are employed</li> <li>When the service delivery interval of the ILEC is measured for comparable services, then conclusion can be drawn regarding whether or not CLECs have a reasonable opportunity to compete for customers</li> <li>The "average completion interval" and "percent completed on time" may prove useful in detecting developing capacity issues</li> </ul>	
<b>Measurements:</b>	<b>Results Detail:</b>
<ul style="list-style-type: none"> <li>Mean Completion Interval</li> <li>Percent Orders Completed on Time</li> </ul>	<ul style="list-style-type: none"> <li>By Major Service Family and Order Type</li> </ul>

## Service Quality Measurements Executive Overview

<b>Function:</b>	
Order Accuracy	
<b>Business Implications:</b>	
<ul style="list-style-type: none"> <li>Customers expect that their service provider will deliver precisely the service ordered and all the features specified</li> <li>This measurement monitors the accuracy of the provisioning work performed by the ILEC in response to CLEC orders</li> </ul>	
<b>Measurements:</b>	<b>Results Detail:</b>
<ul style="list-style-type: none"> <li>Percent Order Accuracy</li> </ul>	<ul style="list-style-type: none"> <li>By Major Service Family</li> </ul>

<b>Function:</b>	
Order Status	
<b>Business Implications:</b>	
<ul style="list-style-type: none"> <li>When a customers calls their service providers, they expect to be able to promptly get the information regarding the progress on their order(s)</li> <li>When changes must be made, such as to the expected delivery date, customers expect that they will be immediately notified so that they may modify their own plans</li> <li>The order status measurements monitor, when compared to the ILEC result, that the CLEC has timely access to order progress information so that the customer may be updated or notified, early on, when changes and rescheduling are necessary</li> </ul>	
<b>Measurements:</b>	<b>Results Detail:</b>
<ul style="list-style-type: none"> <li>Mean Reject Interval</li> <li>Mean FOC Interval</li> <li>Mean Jeopardy Interval</li> <li>Mean Completion Interval</li> <li>Percent Jeopardies Returned</li> </ul>	<ul style="list-style-type: none"> <li>By Status Type and Order Type</li> </ul>

<b>Function:</b>	
Held Orders	
<b>Business Implications:</b>	
<ul style="list-style-type: none"> <li>Customers expect that work will be completed when promised</li> <li>There must be assurances that the average period that CLEC orders are held, due to a delayed completion, is no worse for the CLEC when compared to ILEC orders</li> </ul>	
<b>Measurements:</b>	<b>Results Detail:</b>
<ul style="list-style-type: none"> <li>Mean Held Order Interval</li> <li>Percent Orders Held <math>\geq</math> 90 Days</li> <li>Percent Orders Held <math>\geq</math> 15 Days</li> </ul>	<ul style="list-style-type: none"> <li>By Major Service Family and Reason for Hold</li> </ul>

# Service Quality Measurements

## Executive Overview

### Maintenance and Repair (MR)

<b>Function:</b>	
Time To Restore	
<b>Business Implications:</b>	
<ul style="list-style-type: none"> <li>Customers expect prompt restoral of service to the normal operating parameters whenever troubles are detected</li> <li>The longer the time required to correct a service problem, the greater the customer dissatisfaction</li> </ul>	
<b>Measurements:</b>	<b>Results Detail:</b>
<ul style="list-style-type: none"> <li>Mean Time to Restore</li> </ul>	<ul style="list-style-type: none"> <li>By Major Service Family and Trouble Type</li> </ul>

<b>Function:</b>	
Frequency of Repeat Troubles	
<b>Business Implications:</b>	
<ul style="list-style-type: none"> <li>This measurement, when gathered for both the ILEC and CLEC can establish whether or not CLECs are competitively disadvantaged (vis-à-vis the ILEC) as a result of experiencing more frequent occurrence of customer troubles not being resolved in the first attempt to repair the trouble</li> <li>Differences in this measure may indicate that the CLEC is receiving inferior maintenance support in the initial resolution of troubles or, in the alternative, it may indicate that the network components supplied are of inferior quality</li> </ul>	
<b>Measurements:</b>	<b>Results Detail:</b>
<ul style="list-style-type: none"> <li>Repeat Trouble Rate</li> </ul>	<ul style="list-style-type: none"> <li>By Major Service Family and Trouble Type</li> </ul>

<b>Function:</b>	
Frequency of Troubles (Troubles per 100 Lines)	
<b>Business Implications:</b>	
<ul style="list-style-type: none"> <li>Customers demand high quality service performance from their supplier and differentials in performance are quickly recognized throughout the market place</li> <li>When measured for both the ILEC and CLEC and compared, this measure can be used to establish that CLECs are not competitively disadvantaged, compared to ILEC, as a result of experiencing more frequent incidents of trouble reports</li> <li>Disparity in this measure may indicate differences in the underlying quality of the network components supplied</li> </ul>	
<b>Measurements:</b>	<b>Results Detail:</b>
<ul style="list-style-type: none"> <li>Trouble Rate</li> </ul>	<ul style="list-style-type: none"> <li>By Major Service Family and Trouble Type</li> </ul>

# Service Quality Measurements

## Executive Overview

<b>Function:</b>	
Estimated Time To Restore Met	
<b>Business Implications:</b>	
<ul style="list-style-type: none"> <li>When customers experience trouble on working services, they naturally expect the services to be restored within the time frame promised</li> <li>When this measure is collected for the ILEC and CLEC and then compared, it can be used to establish that CLECs are receiving equally reliable (as compared to the ILEC operations) estimates of the time required to complete service repairs</li> </ul>	
<b>Measurements:</b>	<b>Results Detail:</b>
<ul style="list-style-type: none"> <li>Percentage of Customer Troubles Resolved Within Estimate</li> </ul>	<ul style="list-style-type: none"> <li>By Major Service Family and Trouble Type</li> </ul>

# Service Quality Measurements

## Executive Overview

General (GE)

<b>Function:</b>	
Systems Availability	
<b>Business Implications:</b>	
<ul style="list-style-type: none"> <li>Access to essential business functionality, supported by OSS of the ILEC, is absolutely essential to CLEC operations</li> <li>This measure monitors that such OSS functionality is at least as accessible to the CLEC as to the ILEC</li> </ul>	
<b>Measurements:</b>	<b>Results Detail:</b>
<ul style="list-style-type: none"> <li>Percent System Availability</li> </ul>	<ul style="list-style-type: none"> <li>By Function Interface</li> </ul>

<b>Function:</b>	
Center Responsiveness	
<b>Business Implications:</b>	
<ul style="list-style-type: none"> <li>When CLECs experience operational problems dealing with ILEC processes or interfaces, prompt support by the ILEC is required in order to assure that the CLEC customers are not adversely impacted</li> <li>Any delay in responding to CLEC center requests for support (e.g., request for a vanity telephone number) will, in turn, adversely impact the CLEC retail customer who may be holding on-line with the CLEC customer service agent</li> <li>This measure, when gathered for both the CLEC and ILEC, supports monitoring that ILEC handling of support calls from CLECs is at least as responsive as for calls by ILEC retail customers seeking assistance (e.g., calling the business office of the ILEC or call the ILEC to report service repair issues)</li> </ul>	
<b>Measurements:</b>	<b>Results Detail:</b>
<ul style="list-style-type: none"> <li>Mean Time to Answer Calls</li> <li>Call Abandonment Rate</li> </ul>	<ul style="list-style-type: none"> <li>By Support Center Provided</li> </ul>



# Service Quality Measurements

## Executive Overview

### Billing (BI)

<b>Function:</b>	
Timeliness Of Billing Record Delivery	
<b>Business Implications:</b>	
<ul style="list-style-type: none"> <li>Regardless whether the billing is for retail customer or exchange access service, the timing of ILEC delivery of billing records must provide CLECs with the opportunity to deliver timely bills in as timely a manner as the ILEC; otherwise artificial competitive advantage would be realized by the ILEC</li> </ul>	
<b>Measurements:</b>	<b>Results Detail:</b>
<ul style="list-style-type: none"> <li>Mean Time to Provide Recorded Usage Records</li> <li>Mean Time to Deliver Invoices</li> </ul>	<ul style="list-style-type: none"> <li>By Type of Usage (End User Direct Bill, End User Alternately Billed, or Access) or By Type of Invoice (TSR or UNE)</li> </ul>

<b>Function:</b>	
Accuracy of Billing Records	
<b>Business Implications:</b>	
<ul style="list-style-type: none"> <li>The accuracy of billing records affects the accuracy of the billing ultimately delivered to local service customers, whether retail service or exchange access service customers</li> <li>Billing for the elements from which CLEC services are constructed must be validated to assure that only correct charges are paid</li> </ul>	
<b>Measurements:</b>	<b>Results Detail:</b>
<ul style="list-style-type: none"> <li>Percent Invoice Accuracy</li> <li>Percent Usage Accuracy</li> </ul>	<ul style="list-style-type: none"> <li>By Type of Usage (End User Direct Bill, End User Alternately Billed, or Access) or By Type of Invoice (TSR or UNE)</li> </ul>

# Service Quality Measurements

## Executive Overview

### Operator Services and Directory Assistance (OS, DA)

<b>Function:</b> <del>226</del>	
Speed To Answer	
<b>Business Implications:</b>	
<ul style="list-style-type: none"><li>In order to assure that an unjustified competitive advantage is not created for the ILEC, the speed of answer delivered to CLEC retail customers, when the ILEC provides Operator Services or Directory Services on behalf of the CLEC, must be no slower than the speed of answer that the ILEC delivers to its own retail customers of equivalent local services</li></ul>	
<b>Measurements:</b>	<b>Results Detail:</b>
<ul style="list-style-type: none"><li>Mean Time to Answer</li></ul>	<ul style="list-style-type: none"><li>Operator Services and Directory Service Separately Reported Detailed, for each Service by Machine and Human Answer Time</li></ul>

# Service Quality Measurements

## Executive Overview

### Network Performance (NP)

<b>Function:</b>	
Network Performance Parity	
<b>Business Implications:</b>	
<ul style="list-style-type: none"> <li>The perceived quality of CLEC retail services, particularly when either ILEC services are resold or UNE combinations are employed, will be heavily influenced by the underlying quality of the ILEC network performance</li> <li>Customers experience the quality of the service provider each time services are used</li> </ul>	
<b>Measurements:</b>	<b>Results Detail:</b>
<ul style="list-style-type: none"> <li>Network Performance Parity</li> </ul>	<ul style="list-style-type: none"> <li>Transmission Quality</li> <li>Speed Of Connection</li> <li>Reliability</li> </ul>

# Service Quality Measurements

## Executive Overview

### Interconnect / Unbundled Elements and Combos (IUE)

<b>Function:</b>	
Availability of Network Elements	
<b>Business Implications:</b>	
<ul style="list-style-type: none"> <li>Because CLECs use individual elements as well as element combinations to deliver unique services, it is essential that the UNE functionality operate properly due to the crucial role played by such elements in providing quality retail services</li> <li>This measure monitors individual network element or element combinations, that do not have an apparent retail analog, to assure that CLECs have a meaningful opportunity to compete through access to and use of element (or combination) functionality</li> </ul>	
<b>Measurements:</b>	<b>Results Detail:</b>
<ul style="list-style-type: none"> <li>Availability of Network Elements</li> </ul>	<ul style="list-style-type: none"> <li>By Unique UNE or UNE Combination employed (e.g., A-Link, D-Link, SCPs/Databases, SCPs/Databases Correctly Updated, Loop Combo Availability)</li> </ul>

<b>Function:</b>	
Performance of Network Elements	
<b>Business Implications:</b>	
<ul style="list-style-type: none"> <li>As CLECs use individual elements (as well as element combinations) to deliver unique services, it is essential that the UNE functionality operates in a timely manner because of the crucial role played by such elements in providing quality retail services</li> </ul>	
<b>Measurements:</b>	<b>Results Detail:</b>
<ul style="list-style-type: none"> <li>Timeliness of Element Performance</li> </ul>	<ul style="list-style-type: none"> <li>By Unique UNE or UNE Combination employed (e.g., LIDB Query time out)</li> </ul>

## Service Quality Measurements

### Formula Quick Reference

	Measurement Description By Business Process:	Measurement Formula:
	<b>Pre-Ordering (PO)</b>	
PO-1	Average Response Interval for Pre-Ordering Information	Average Response Interval = $\Sigma[(\text{Query Response Date \& Time}) - (\text{Query Submission Date \& Time})] / (\text{Number of Queries Submitted in Reporting Period})$
	<b>Ordering and Provisioning (OP)</b>	
OP-1	Average Completion Interval	Average Completion Interval = $\Sigma[(\text{Completion Date \& Time}) - (\text{Order Submission Date \& Time})] / (\text{Count of Orders Completed in Reporting Period})$
OP-2	Percent Orders Completed on Time	Percent Orders Completed on Time = $(\text{Count of Orders Completed within ILEC Committed Due Date}) / (\text{Count of Orders Completed in Reporting Period}) \times 100$
OP-3	Percent Order Accuracy	Percent Order Accuracy = $(\Sigma \text{Orders Completed w/o Error}) / (\Sigma \text{Orders Completed}) \times 100$
OP-4	Mean Reject Interval	Mean Reject Interval = $\Sigma[(\text{Date and Time of Order Rejection}) - (\text{Date and Time of Order Acknowledgment})] / (\text{Number of Orders Rejected in Reporting Period})$
OP-5	Mean FOC Interval	Mean FOC Interval = $\Sigma[(\text{Date and Time of Firm Order Confirmation}) - (\text{Date and Time of Order Acknowledgment})] / (\text{Number of Orders Confirmed in Reporting Period})$
OP-6	Mean Jeopardy Interval	Mean Jeopardy Interval = $\Sigma[(\text{Date and Time of Committed Due Date for the Order}) - (\text{Date and Time of Jeopardy Notice})] / (\text{Number of Orders Jeopardized in Reporting Period})$
OP-7	Mean Completion Interval	Completion Interval = $\Sigma[(\text{Date and Time of Notice of Completion Issued to the CLEC}) - (\text{Date and Time of Work Completion by ILEC})] / (\text{Number of Orders Completed in Reporting Period})$
OP-8	Percent Jeopardies Returned	Percent Jeopardies Returned = $(\text{Number of Orders Jeopardized in Reporting Period}) / (\text{Number of Orders Confirmed in Reporting Period})$
OP-9	Mean Held Order Interval	Mean Held Order Interval = $\Sigma(\text{Reporting Period Close Date} - \text{Committed Order Due Date}) / (\text{Number of Orders Pending and Past The Committed Due Date})$ for all orders pending and past the committed due date
OP-10	Percent Orders Held $\geq 90$ Days	$(\# \text{ of Orders Held for } \geq 90 \text{ days}) / (\text{Total \# of Orders Pending But Not Completed}) \times 100$
OP-11	Percent Orders Held $\geq 15$ Days	$(\# \text{ of Orders Held for } \geq 15 \text{ days}) / (\text{Total \# of Orders Pending But Not Completed}) \times 100$

## Service Quality Measurements Formula Quick Reference

	<b>Maintenance and Repair (MR)</b>	
MR-1	Mean Time to Restore	Mean Time To Restore = $\Sigma[(\text{Date and Time of Ticket Closure}) - (\text{Date and Time of Ticket Creation})] / (\text{Count of Trouble Tickets Closed in Reporting Period})$
MR-2	Repeat Trouble Rate	Repeat Trouble Rate = $(\text{Count of Service Access Line Generating More Than One Trouble Within a Continuous 30 Day Period}) / (\text{Number of Reports in the Report Period}) \times 100$
MR-3	Trouble Rate	Trouble Rate = $(\text{Count of Initial \& Repeated Trouble Reports in the Current Period}) / (\text{Number of Service Access Line in Service at End of the Report Period}) \times 100$
MR-4	Percentage of Customer Troubles Resolved Within Estimate	Percentage of Customer Troubles Resolved Within Estimate = $(\text{Count of Customer Troubles Resolved By The Quoted Resolution Time and Date}) / (\text{Count of Customer Troubles Tickets Closed}) \times 100$
	<b>General (GE)</b>	
GE-1	Percent System Availability	% System Availability = $[(\text{Hours Functionality is Available to CLECs During Report Period}) / (\text{Number of Hours Functionality was Scheduled to be Available During the Period})] \times 100$
GE-2	Mean Time to Answer Calls	Mean Time to Answer Calls = $\Sigma [(\text{Date and Time of Call Answer}) - (\text{Date and Time of Call Receipt})] / (\text{Total Calls Answered by Center})$
GE-3	Call Abandonment Rate	Call Abandonment Rate = $(\text{Count of Calls Terminated Before Answer During the Reporting Period}) / (\text{Count of All Calls Placed in Queue During the Reporting Period})$
	<b>Billing (BI)</b>	
BI-1	Mean Time to Provide Recorded Usage Records	Mean Time to Provide Recorded Usage Records = $\{ \Sigma[(\text{Data Set Transmission Date}) - (\text{Date of Message Recording})] \} / (\text{Count of All Messages Transmitted in Reporting Period})$
BI-2	Mean Time to Deliver Invoices	Mean Time to Deliver Invoices = $\Sigma[(\text{Invoice Transmission Date}) - (\text{Date of Scheduled Bill Cycle Close})] / (\text{Count of Invoices Transmitted in Reporting Period})$
BI-3	Percent Invoice Accuracy	Percent Invoice Accuracy = $[(\text{Number of Invoices Delivered in the Reporting Period that Have Complete Information, Reflect Accurate Calculations and are Properly Formatted}) / \text{Total Number of Invoices Issued in the Reporting Period}] \times 100$
BI-4	Percent Usage Accuracy	Percent Usage Accuracy = $[(\text{Number of Usage Records Delivered in the Reporting Period That Reflected Complete Information Content and Proper Formatting}) / (\text{Total Number of Usage Records Transmitted})] \times 100$

## Service Quality Measurements Formula Quick Reference

	<b>Operator Services and Directory Assistance (OS, DA)</b>	
OS/DA-1	Mean Time To Answer	Mean Time To Answer = $\frac{\sum(\text{Date and Time of Call Answer}) - (\text{Date and Time of Call Receipt})}{(\text{Total Calls Answered on Behalf of CLECs in Reporting Period})}$
	<b>Network Performance (NP)</b>	
NP-1	Network Performance Parity	Network Performance Parity = $\frac{\sum(\text{Network Performance Parameter Result})}{(\text{Number of Tests Conducted})}$
	<b>Interconnect / Unbundled Elements and Combos (IUE)</b>	
IUE-1	Function Availability	<p>Function Availability<sup>1</sup> = <math>\frac{(\text{Amount of Time}^2 \text{ a Functionality is Useable}^1 \text{ by a CLEC in a Specified Period})}{(\text{Total Time}^2 \text{ Functionality Was Intended to Be Useable})}</math></p> <p>Notes:  1. These measure may also be expressed in the negative, that is, in term of unavailability.  2. In some instances, rather than time, the availability will be express in terms of transactions executed successfully compared to transactions attempted.</p>
IUE-2	Timeliness of Element Performance	Timeliness of Element Performance = $\frac{(\text{Number of Times Functionality Executes Successfully Within the Established Timeliness Standard})}{(\text{Number of Times Execution of Functionality was Attempted})}$

## Service Quality Measurements Measurement Detail

**The Measurement Detail section:**

- Provides explicit detail information for each measurement
- Provides business reasons for the measurement, required data elements, analogs to the existing ILEC business function and comparative results suggestions
- Is targeted at those individuals who need to know and understand the detail categories and measurement methodologies

<b>Measurement Detail:</b>	Page 20
Pre-Ordering (PO)	Page 21
Ordering and Provisioning (OP)	Page 23
Maintenance and Repair (MR)	Page 33
General (GE)	Page 41
Billing (BI)	Page 45
Operator Services and Directory Assistance (OS, DA)	Page 49
Network Performance (NP)	Page 51
Interconnect / Unbundled Elements and Combos (IUE)	Page 52
<i>Appendix A: Reporting Dimensions</i>	<i>Page 56</i>
<i>Appendix B: Glossary</i>	<i>Page 58</i>



# Service Quality Measurements

## Measurement Detail

### Pre-Ordering (PO)

<b>Function:</b>	<b>Average Response Interval for Pre-Ordering Information</b>
<b>Business Implications:</b>	<p>As an initial step of establishing service, the customer service agent must establish such basic facts as availability of desired features, likely service delivery intervals, the telephone number to be assigned, the current products and features the customer has, and the validity of the street address. Typically, this type of information is gathered from supporting OSS while the customer (or potential customer) is on the telephone with the customer service agent. Because pre-ordering activities are the first tangible contact that a customer may have with a CLEC, it is critical that the CLEC be perceived as equally competent, knowledgeable and fast as and ILEC customer service agent. This measure is designed to monitor the time required for CLECs to obtain the pre-ordering information necessary to establish and modify service. Comparison to the ILEC results allow conclusions whether an equal opportunity exists for the CLEC to deliver a comparable customer experience (compared to the ILEC) when a retail customer calls the CLEC with a service inquiry.</p>
<b>Measurement Methodology:</b>	<p><b>Average Response Interval = <math>\Sigma[(\text{Query Response Date \&amp; Time}) - (\text{Query Submission Date \&amp; Time})] / (\text{Number of Queries Submitted in Reporting Period})</math></b></p> <p><b>For CLEC Results:</b> The response interval for each pre-ordering query is determined by computing the elapsed time from the ILEC receipt of a query from the CLEC, whether or not syntactically correct, to the time the ILEC returns the requested data to the CLEC. Elapsed time is accumulated for each major query type, consistent with the specified reporting dimension, and then divided by the associated total number of query received by the ILEC during the reporting period.</p> <p><b>For ILEC Results:</b> The ILEC computation is identical to that for the CLEC with the clarifications noted below.</p> <p><b>Other Clarifications and Qualification:</b></p> <ul style="list-style-type: none"> <li>• The elapsed time for an ILEC query is measured from the point in time when the ILEC customer service agent submits the request for identical or similar information into the ILEC OSS until the time when the ILEC OSS returns the requested information to the ILEC customer service agent.</li> <li>• As additional pre-ordering functionality is established by industry, for example with respect to unbundled network elements, the reporting dimensions may be expanded.</li> <li>• Elapsed time is measured in seconds and tenths of seconds rounded to the nearest tenth of a second</li> <li>• Elapsed time is to be measured through automated rather than manual monitor and logging.</li> <li>• The ILEC service agent entry of a request for pre-ordering information (to the ILEC OSS) is considered to be the equivalent of the ILEC receipt of a query from the CLEC.</li> <li>• The ILEC OSS return of information, whether in hard copy or by display on the ILEC service agent's terminal is considered equivalent to the return of requested information to the CLEC.</li> </ul>

## Service Quality Measurements Measurement Detail

<b>Reporting Dimensions:</b>		<b>Excluded Situations:</b>	
<ul style="list-style-type: none"><li>• Pre-Ordering Query Types (See Appendix A)</li><li>• Geographic Scope</li></ul>		<ul style="list-style-type: none"><li>• None</li></ul>	
<b>Data Retained Relating To CLEC Experience:</b>		<b>Data Retained Relating To ILEC Performance:</b>	
<ul style="list-style-type: none"><li>• Report Month</li><li>• Query Identifier (e.g., unique tracking number)</li><li>• Query Receipt Date by ILEC</li><li>• Query Receipt Time by ILEC</li><li>• Query Type (per reporting dimension)</li><li>• Data Response Date</li><li>• Data Response Time</li><li>• Geographic Scope</li></ul>		<ul style="list-style-type: none"><li>• Report Month</li><li>• Query Type (per reporting dimension)</li><li>• Mean response interval</li><li>• Standard error of the mean response interval</li><li>• Geographic Scope</li></ul>	
<b>Performance Standard in Absence of ILEC Results:</b>	<p>If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete:</p> <ul style="list-style-type: none"><li>• Other than a query when 30 or more telephone numbers are requested, the response interval will be less than or equal 2 seconds for 98% of the CLEC's queries received by the ILEC during the reporting period and no query will take more than 5 seconds.</li><li>• For queries requesting 30 or more telephone numbers, the response interval is never to exceed two hours.</li></ul>		

# Service Quality Measurements

## Measurement Detail

### Ordering and Provisioning (OP)

<b>Function:</b>	<b>Order Completion Intervals</b>
<b>Business Implications:</b>	<p>In order to be successful in the marketplace, CLECs must be capable of delivering service in time frames equal or better than what the ILEC delivers for comparable service configurations. Likewise, when the CLEC commits to a due date for service delivery, the customer plans for service availability has been established and the customer will be dissatisfied if the requested service or feature is not delivered when promised. The "average completion interval" measure monitors the time required by the ILEC to deliver integrated and operable service components requested by the CLEC, regardless of whether services resale or unbundled network elements are employed. When the service delivery interval of the ILEC is measured for comparable services, then conclusion can be drawn regarding whether or not CLECs have a reasonable opportunity to compete for customers. The "orders completed on time" measure monitors the reliability of ILEC commitments with respect to committed due dates to assure that CLECs can reliably quote expected due dates to their retail customer. In addition, when monitored over time, the "average completion interval" and "percent completed on time" may prove useful in detecting developing capacity issues.</p>
<b>Measurement Methodology:</b>	<p><b>Average Completion Interval</b> = <math>\Sigma [(\text{Completion Date \&amp; Time}) - (\text{Order Submission Date \&amp; Time})] / (\text{Count of Orders Completed in Reporting Period})</math></p> <p><b>Percent Orders Completed on Time</b> = <math>(\text{Count of Orders Completed w/o ILEC Committed Due Date}) / (\text{Count of Orders Completed in Reporting Period}) \times 100</math></p> <p><b>For CLEC Results:</b> The actual completion interval is determined for each order processed during the reporting period. The completion interval is the elapsed time from the ILEC receipt of a syntactically correct order from the CLEC to the ILEC's return of a valid completion notification to the CLEC. Elapsed time for each order is accumulated for each reporting dimension (see below). The accumulated time for each reporting dimension is then divided by the associated total number of orders completed within the reporting period.</p> <p>The percentage of orders completed on time is determined by first counting, for each specified reporting dimension, both the total numbers of orders completed within the reporting interval and the number of orders completed by the committed due date (as specified on the initial FOC returned to the CLEC). For each reporting dimension, the resulting count of orders completed no later than the committed due date is divided by the total number of order completed with the resulting fraction expressed as a percentage.</p> <p><b>For ILEC Results:</b> The ILEC computation is identical to that for the CLEC with the clarifications noted below.</p> <p><b>Other Clarifications and Qualification:</b></p> <ul style="list-style-type: none"> <li>The elapsed time for an ILEC order is measured from the point in time when the ILEC customer service agent enters the order into the ILEC order processing system until the date and time reported by the ILEC installation personnel log actual completion of all work necessary to permit service initiation, whether or not the ILEC initiates customer billing at that point in</li> </ul>

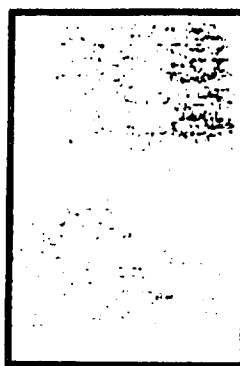
# Service Quality Measurements

## Measurement Detail

	<p>time.</p> <ul style="list-style-type: none"> <li>• Results for the CLECs are captured and reported at the order level (e.g., unique PON).</li> <li>• The Completion Date is the date upon which the ILEC issues the Order Completion Notice to the CLEC.</li> <li>• If the CLEC initiates a supplement to the originally submitted order and the supplement reflects changes in customer requirements (rather than responding to ILEC initiated changes), then the order submission date and time will be the date and time of the ILEC receipt of a syntactically correct order supplement.</li> <li>• No other supplemental order activities will result in an update to the order submission date and time used for the purposes of computing the order completion interval.</li> <li>• See "Order Status" metric sheet for discussion of ILEC analogs receipt of a syntactically correct and return of a valid completion notice.</li> <li>• Elapsed time is measured in hours and hundredths of hours rounded to the nearest tenth of an hour.</li> <li>• Because this should be a highly automated process, the accumulation of elapsed time continues through off-schedule, weekends and holidays.</li> </ul>
<b>Reporting Dimensions:</b> <ul style="list-style-type: none"> <li>• Service - Standard Service Groupings (See Appendix A)</li> <li>• Activity - Standard Order Activities (See Appendix A)</li> <li>• Geographic Scope</li> </ul>	<b>Excluded Situations:</b> <ul style="list-style-type: none"> <li>• Canceled orders</li> <li>• Initial Order when supplemented by CLEC</li> <li>• ILEC Orders associated with internal or administrative use of local services</li> </ul>
<b>Data Retained Relating To CLEC Experience:</b> <ul style="list-style-type: none"> <li>• Report Month</li> <li>• CLEC Order Number</li> <li>• Order Submission Date</li> <li>• Order Submission Time</li> <li>• Order Completion Date</li> <li>• Order Completion Time</li> <li>• Service Type</li> <li>• Activity Type</li> <li>• Geographic Scope</li> </ul>	<b>Data Retained Relating To ILEC Performance:</b> <ul style="list-style-type: none"> <li>• Report Month</li> <li>• Average Order Completion Interval</li> <li>• Standard Error for the Order Completion Interval</li> <li>• Service Type</li> <li>• Activity Type</li> <li>• Geographic Scope</li> </ul>
<b>Performance Standard in Absence of ILEC Results:</b>	<p>If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete:</p> <ul style="list-style-type: none"> <li>• Unless otherwise noted, the order completion interval for installations that do not require a premise visit and do not require anything beyond software updates is 1 business day.</li> <li>• Unless otherwise noted, the order completion intervals for installations that involve a premise visit or physical work is three business days.</li> <li>• Installation Interval Exceptions: <ul style="list-style-type: none"> <li>• UNE Platform (at least DS0 loop + local switching + common transport elements) installation interval is 1 business day whether or not premise work is required.</li> <li>• The installation interval for unbundled loops is always 1 business day.</li> </ul> </li> </ul>

## Service Quality Measurements

### Measurement Detail

	<ul style="list-style-type: none"><li>• UNE Channelized DS1 (DS1 unbundled loop + multiplexing) installation interval is within 2 business days.</li><li>• Unbundled Switching Element installation interval is within 2 business days</li><li>• DS0/DS1 Dedicated Transport installation interval is within 3 business days</li><li>• All other Dedicated Transport installation interval is within 5 business days.</li><li>• The installation interval for all order involving only feature modification is 5 hours.</li><li>• Order completion interval for all disconnection orders is 1 business day.</li></ul>
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## Service Quality Measurements

### Measurement Detail

<b>Function:</b>	<b>Order Accuracy</b>
<b>Business Implications:</b>	<p>Customers expect that their service provider will deliver precisely the service ordered and all the features specified. Any service provider that is unreliable, with respect to fulfilling orders, will not only generate ill-will with customers where errors are made, but will also incur higher cost due to rework and processing of customer complaints. This measurement monitors the accuracy of the provisioning work performed by the ILEC, in response to CLEC orders. When the ILEC provide the comparable measure for its own operation then it is possible to know if provisioning work performed for CLECs is at least as that performed by the ILEC for its own retail local service operations.</p>
<b>Measurement Methodology:</b>	<p><b>Percent Order Accuracy</b> = <math>(\Sigma \text{Orders Completed w/o Error}) / (\Sigma \text{Orders Completed}) \times 100</math></p> <p><b>For CLEC Results:</b> For each order completed during the reporting period, the original account profile and the order that the CLEC sent to the ILEC are compared to the services and features reflected upon the account profile as it existed following completion of the order by the ILEC. An order is "completed without error" if all service attribute and account detail changes (as determined by comparing the original and the post order completion account profile) completely and accurately reflect the activity specified on the original and supplemental CLEC orders. "Total number of orders completed" refers to order completions received by the CLEC from the ILEC for each reporting dimension identified below.</p> <p><b>For ILEC Results:</b> Same computation as for the CLEC with the clarifications noted below.</p> <p><b>Other Clarifications and Qualification:</b></p> <ul style="list-style-type: none"> <li>• <b>Order Supplements</b> - If the CLEC initiates any supplements to the originally submitted order, for the purposes of reflecting changes in customer requirements, then the cumulative effect of the initial order and all the supplemental orders will be the compared with differences determined by comparison of the pre- and post order completion account profiles.</li> <li>• <b>Completion Notices</b> - To the extent that the ILEC supplies a completion notice containing sufficient information to perform validation of the order accuracy, then the Completion Notice information can be utilized in lieu of the comparison of the "before" and "after" account profiles. Use of the completion notice for this purpose would need to be at the mutual agreement of the ILEC and the CLEC.</li> </ul> <p><b>All Orders</b> - The comparison is between the CLEC order and the account profile as it existed before and after order completion.</p> <ul style="list-style-type: none"> <li>• <b>Service Profile</b> - If a sample is employed for this measurement, then the ILEC should also be prepared, if requested, to provide the percentage distribution of order activity types represented within each service type for both the ILEC and CLEC sample.</li> </ul> <p>Sampling may be utilized to establish order accuracy provided the results produced are consistent with the reporting dimensions specified, the sample methodology is disclosed in advance and reflects generally accepted sampling methodology, and the sampling process may be audited by the CLEC.</p>

## Service Quality Measurements Measurement Detail

<b>Reporting Dimensions:</b>		<b>Excluded Situations:</b>	
<ul style="list-style-type: none"><li>• Service - Standard Service Groupings (See Appendix A)</li></ul>		<ul style="list-style-type: none"><li>• Orders canceled by the CLEC</li><li>• Order Activities of the ILEC associated with internal or administrative use of local services.</li></ul>	
<b>Data Retained Relating To CLEC Experience:</b>		<b>Data Retained Relating To ILEC Performance:</b>	
<ul style="list-style-type: none"><li>• Report Month</li><li>• Percentage Order Accuracy</li><li>• Service Type</li><li>• Geographic Scope</li></ul>		<ul style="list-style-type: none"><li>• Report Month</li><li>• Percentage Order Accuracy</li><li>• Service Type</li><li>• Geographic Scope</li></ul>	
<b>Performance Standard in Absence of ILEC Results:</b>	If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete: <ul style="list-style-type: none"><li>• Completed CLEC orders, by reporting dimension, are accurate no less than 99% of the time.</li></ul>		

## Service Quality Measurements Measurement Detail

Function:	Order Status
<b>Business Implications:</b>	<p>When a customer calls their service provider, they expect to get information promptly regarding the progress on their order(s). Likewise, when changes must be made, such as to the expected delivery date, customers expect that they will be immediately notified so that they may modify their own plans. A service provider that cannot fulfill such expectations will generate customer dissatisfaction. Lengthy delays in exchange of status information will result in the delay of other customer affecting activities: Inside wiring activity is often not confirmed until the firm order confirmation is returned, and customer billing will not be initiated until the CLEC receives the order completion notice, to cite two examples of impact. The order status measurements monitor, when compared to the ILEC result, that the CLEC has timely access to order progress information so that the customer may be updated or notified, early on, when changes and rescheduling are necessary. Furthermore, the "% jeopardies returned" measure for the CLEC, when reported in comparison to the ILEC result, will gauge whether initial commitments to the CLEC for order processing are at least as reliable as the commitments the ILEC makes for its own operations.</p>
<b>Measurement Methodology:</b>	<p>Order status intervals measure the elapsed time necessary to provide a notice to the CLEC that an "unexpected" condition has been encountered when processing an order. Order status includes notification of order <u>rejection</u> due to violation of order content or syntax requirements, <u>confirmation</u> of order acceptance, <u>jeopardy</u> of an order due to the inability to complete work as originally committed and work <u>completion</u> notification. The interval required to supply each of these four preceding major categories of status must be separately monitored and reported.</p> <p><b>Reject Interval</b> = <math>\Sigma[(\text{Date and Time of Order Rejection}) - (\text{Date and Time of Order Acknowledgment})]/(\text{Number of Orders Rejected in Reporting Period})</math></p> <p><u>Reject Interval</u> is the elapsed time between the ILEC receipt of an order from the CLEC to the ILEC return of a notice of a syntax rejection to the CLEC. The time measurement starts when the ILEC accepts (acknowledges) the order from the CLEC. The time measurement stops when the ILEC returns a rejection notice to the CLEC. The elapsed time is accumulated by order type with the resulting accumulated time then divided by the count of rejected orders associated with the particular service and order type.</p> <p><b>FOC Interval</b> = <math>\Sigma[(\text{Date and Time of Firm Order Confirmation}) - (\text{Date and Time of Order Acknowledgment})]/(\text{Number of Orders Confirmed in Reporting Period})</math></p> <p><u>Interval for Return of a Firm Order Confirmation (FOC Interval)</u> is the elapsed time between the ILEC acceptance of a syntactically correct order and the return of a confirmation to the CLEC that the order will be worked as submitted or worked with the modifications specified on the confirmation. The time measurement starts when the ILEC accepts (acknowledges) the order from the CLEC. The time measurement stops when the ILEC returns a valid firm order confirmation to the CLEC. The elapsed time is accumulated by order type with the resulting accumulated time then divided by the count of orders associated with the particular service and order type.</p> <p><b>Jeopardy Interval</b> = <math>\Sigma[(\text{Date and Time of Committed Due Date for the Order}) -</math></p>



## Service Quality Measurements

### Measurement Detail

**(Date and Time of Jeopardy Notice)/(Number of Orders Jeopardized in Reporting Period)**

Jeopardy Interval is the remaining time between the pre-existing committed order completion date and time (communicated via the FOC) and the date and time the ILEC issues a notice to the CLEC indicating an order is in jeopardy of missing the due date. The scheduled completion time will be assumed to be 5:00 p.m. local time unless other information is communicated in the FOC. The date and time of the jeopardy notice delivered by the ILEC is subtracted from the scheduled completion date to establish the jeopardy interval for any order placed in jeopardy. The jeopardy interval is accumulated by standard order activity with the resulting accumulated time then divided by the count of orders associated with the particular service and standard order activity.

**Completion Interval =  $\Sigma[(\text{Date and Time of Notice of Completion Issued to the CLEC}) - (\text{Date and Time of Work Completion by ILEC})]/(\text{Number of Orders Completed in Reporting Period})$**

Completion Notice Interval is the elapsed time between the ILEC technician's reported completion of physical work and the issuance of a valid completion notice to the CLEC. Where physical work is not required, such as in the case of software-only changes, the elapsed time will be measured beginning at 5:00 p.m. local time of the date for the committed completion and will end when the ILEC returns a valid completion notice to the CLEC. If a valid completion notice is returned before 5:00 p.m. on the committed completion date and no physical work is involved, then the elapsed time will be recorded as 1/10 hour. The elapsed time is accumulated by order type with the resulting accumulated time then divided by the count of orders associated with the particular service and order type.

**% Jeopardies =  $(\text{Number of Orders Jeopardized in Reporting Period})/(\text{Number of Orders Confirmed in Reporting Period})$**

Percentage Jeopardies Returned is the percentage of total orders processed for which the ILEC notifies the CLEC that the work will not be completed as committed on the original FOC. The measurement result is derived by dividing the count of jeopardy notices the ILEC issues to the CLEC by the count of FOC returned by the ILEC during the identical period. Both the "Number of Orders Jeopardized in Reporting Period" and "Number of Orders Confirmed in Reporting Period" are utilized in other status measurement computations.

**For ILEC Results:** Same computation as the CLEC with the clarifications outlined below.

**Other Clarifications and Qualification:**

- When the ILEC processes orders for a CLEC via different interfaces (e.g., ASR and EDI) then the preceding measurement must be computed for each interface arrangement.
- All intervals are measured in hours and hundredths of hour rounded to the nearest hundredth.
- Because this should be a highly automated process, the accumulation of elapsed time continues through off-schedule, weekends and holidays.
- "Syntactically correct" means all fields required to process an order are

## Service Quality Measurements Measurement Detail

	<p>populated and reflect the correct format.</p> <ul style="list-style-type: none"> <li>• The ILEC service agent's attempt to submit an order for processing by the ILEC OSS is considered equivalent to the ILEC acknowledgment of the CLEC's order.</li> <li>• The ILEC OSS return of any indication to the service agent that an order cannot be processed as submitted is considered equivalent to the ILEC return of a rejection notice to the CLEC.</li> <li>• Return of any information (e.g., order recapitulation) to the ILEC customer service agent that indicates the order can be processed, is the equivalent of the ILEC return of a FOC to the CLEC.</li> <li>• Logging of information in the ILEC OSS, whether manual or automatic, that indicates an order may not be completed by the existing due date, is equivalent of the return of a jeopardy notice to the CLEC regardless of whether or not the ILEC takes action based upon such information.</li> <li>• Automatic logging of work completion and manual logging of work completion, whether input to directly to the ILEC OSS or into an intermediate storage device, is consider the equivalent of the return of a completion notice to the CLEC.</li> </ul>
<b>Reporting Dimensions:</b> <ul style="list-style-type: none"> <li>• Standard Order Activities (See Appendix A)</li> <li>• Geographic Scope</li> </ul>	<b>Excluded Situations:</b> <ul style="list-style-type: none"> <li>• Rejection Interval - None</li> <li>• Jeopardy Interval - None</li> <li>• Firm Order Confirmation Interval - None</li> <li>• Completion Notification Interval - None</li> <li>• Percentage Jeopardies Returned - None</li> </ul>
<b>Data Retained Relating To CLEC Experience:</b> <ul style="list-style-type: none"> <li>• Report Month</li> <li>• CLEC Order Number</li> <li>• Order Submission Date</li> <li>• Order Submission Time</li> <li>• Status Type (Rejection, FOC, Jeopardy Type, Completion Notice)</li> <li>• Status Notice Date</li> <li>• Status Notice Time</li> <li>• Standard Order Activity</li> <li>• Geographic Scope</li> </ul>	<b>Data Retained Relating To ILEC Performance:</b> <ul style="list-style-type: none"> <li>• Report Month</li> <li>• Status Type (Rejection, FOC, Jeopardy Type, Completion Notice)</li> <li>• Average Status interval</li> <li>• Standard error of status interval</li> <li>• Standard Order Activity</li> <li>• Geographic Scope</li> </ul>
<b>Performance Standard in Absence of ILEC Results:</b>	<p>If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete:</p> <ul style="list-style-type: none"> <li>• no less than 97% of Rejects in a reporting period are returned within 15 seconds</li> <li>• all Firm Order Confirmations are returned within 4 hours</li> <li>• no less than 97% of order completions are returned within 30 minutes of work completion</li> <li>• no less than 97% of Jeopardies should be received by the CLEC a minimum of 2 business days prior to the due date indicated on the final FOC</li> <li>• no more than 5% of the total number of orders should result in a Jeopardy in any given report period</li> </ul>

## Service Quality Measurements Measurement Detail

<b>Function:</b>	Held Orders
<b>Business Implications:</b>	Customers expect that work will be completed when promised. Therefore, when delays occur in completing CLEC orders, there must be assurances that the average period that CLEC orders are held, pending a delayed completion, is no worse for the CLEC when compared to ILEC orders.
<b>Measurement Methodology:</b>	<p><b>Held Order Interval</b> = <math>\Sigma(\text{Reporting Period Close Date} - \text{Committed Order Due Date}) / (\text{Number of Orders Pending and Past The Committed Due Date})</math> for all orders pending and past the committed due date</p> <p><b>For CLEC Results:</b> This metric is computed at the close of each report period. The held order interval is established by first identifying all orders, at the close of the reporting interval, that both have not been reported as "completed" via a valid completion notice and have passed the currently "committed completion date" for the order. For each such order the number of calendar days between the committed completion date and the close of the reporting period is established and represents the held order interval for that particular order. The held order interval is accumulated (by standard service grouping and reason for the order being held, if identified.) The total number of day accumulated in a category is then divided by the number of held orders within the same category to produce the mean held order interval.</p> <p><math>(\# \text{ of Orders Held for } \geq 90 \text{ days}) / (\text{Total } \# \text{ of Orders Pending But Not Completed}) \times 100</math></p> <p><math>(\# \text{ of Orders Held for } \geq 15 \text{ days}) / (\text{Total } \# \text{ of Orders Pending But Not Completed}) \times 100</math></p> <p>This "percentage orders held" measure is complementary to the held order interval but is designed to detect orders continuing in a "non-completed" state for an extended period of time. Computation of this metric utilizes a subset of the data accumulated for the "held order interval" measure. All orders, for which the "held order interval" equals or exceeds 90 (or 15) days, are counted by service type. The total number of pending and past due orders for the same service type are counted (as was done for the held order interval) and divided into the count of orders held past 90 (or 15) days.</p> <p><b>For ILEC Results:</b> Same computation as for the CLEC with the clarifications provided below..</p> <p><b>Other Clarifications and Qualification:</b></p> <ul style="list-style-type: none"> <li>The "held order" measure established by some state commissions as part of minimum service standards is analogous to this proposed measure but, because it is typically limited to monitoring only those orders held because of facility shortages, needs to be expanded to include all reasons that an order is past due.</li> <li><b>Order Supplements</b> - If the CLEC initiates a supplement to the originally submitted order for the purpose of reflecting changes in customer requirements, then the due date returned on the FOC will be the basis for the preceding calculations. No other supplemental order activities will result in an update to the committed due date.</li> <li>See "Order Status" measurement definitions for discussion of the ILEC analog to a completion notice.</li> </ul>

## Service Quality Measurements

### Measurement Detail

<ul style="list-style-type: none"> <li>The held order interval is measured in calendar rather than business days.</li> </ul>	
<b>Reporting Dimensions:</b> <ul style="list-style-type: none"> <li>Service - Standard Service Groupings (See Appendix A)</li> <li>Reason for Hold (no facilities, no equipment, workload, other)</li> <li>Geographic Scope</li> </ul>	<b>Excluded Situations:</b> <ul style="list-style-type: none"> <li>Any orders canceled by the CLEC will be excluded from this measurement.</li> <li>Order Activities of the ILEC associated with internal or administrative use of local services</li> </ul>
<b>Data Retained Relating To CLEC Experience:</b> <ul style="list-style-type: none"> <li>Report Month</li> <li>CLEC Order Number</li> <li>Committed Due Date</li> <li>Order Submission Date</li> <li>Service Type</li> <li>Hold Reason</li> <li>Geographic Scope</li> </ul>	<b>Data Retained Relating To ILEC Performance:</b> <ul style="list-style-type: none"> <li>Report Month</li> <li>Average Held Order Interval</li> <li>Standard Error for Average Held Order Interval</li> <li>Service Type</li> <li>Hold Reason</li> <li>Geographic Scope</li> </ul>
<b>Performance Standard in Absence of ILEC Results:</b>	<p>If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete:</p> <ul style="list-style-type: none"> <li>Less than 0.1% of orders held for more than 15 calendar days</li> <li>No orders held for more than 90 calendar days</li> </ul>

# Service Quality Measurements

## Measurement Detail

### Maintenance and Repair (MR)

<b>Function:</b>	<b>Time To Restore</b>
<b>Business Implications:</b>	Customers expect prompt restoral of service to the normal operating parameters whenever troubles are detected. The longer the time required to correct a service problem, the greater the customer dissatisfaction. This measure, when collected for both the CLEC and ILEC and compared, monitors that CLEC maintenance requests at least as quickly as ILEC maintenance requests.
<b>Measurement Methodology:</b>	<p><b>Mean Time To Restore</b> = <math>\Sigma[(\text{Date and Time of Ticket Closure}) - (\text{Date and Time of Ticket Creation})] / (\text{Count of Trouble Tickets Closed in Reporting Period})</math></p> <p><b>For CLEC Results:</b> The restoral interval for resolution of customer requested maintenance and repair is the elapsed time, measured in hours and tenths of hours, measured from the CLEC logging a trouble ticket with the ILEC, regardless of the ultimate resolution of the trouble, to the time the ILEC returns a valid trouble resolution notification to the CLEC. The elapsed time is accumulated by service type and trouble disposition for the reporting period. The accumulated time is divided by the count of maintenance tickets reported as resolved by the ILEC (by service type and trouble disposition and cause) during the report period.</p> <p><b>For ILEC Results:</b> Same computation as for the CLEC.</p> <p><b>Other Clarifications and Qualification:</b></p> <ul style="list-style-type: none"> <li>• This measure is analogous to the Out Of Service Measure of the ILEC with the exception that all trouble causes are monitored and that the average time to restore is reported rather than a comparison to a target (the same underlying data is required for both computations)</li> <li>• Elapsed time is measured on a 24 hour day, seven days a week basis. The time is measured in hours and hundredths of hours rounded to the nearest hundredth hour.</li> <li>• Multiple reports for the same customer service are treated as separate incidents.</li> <li>• "Restore" means to return to the normally expected operating parameters for the service regardless of whether or not the service, at the time of trouble ticket creations, was operated in a degraded mode or was completely unusable.</li> <li>• A trouble ticket or trouble report is any record (whether paper or electronic) by the ILEC for the purpose of monitoring action and disposition of a service repair or maintenance situation.</li> <li>• ILEC acceptance of a trouble by the call receipt agent is considered equivalent to the CLEC logging or submitting a trouble to the ILEC.</li> <li>• The ILEC closure of a trouble ticket (whether automatic or manual) is considered equivalent to returning a trouble resolution notice to the CLEC.</li> </ul>
<b>Reporting Dimensions:</b>	<b>Excluded Situations:</b>
<ul style="list-style-type: none"> <li>• Service - Standard Service Groupings (See Appendix A)</li> <li>• Disposition and Cause (See Appendix A)</li> <li>• Geographic Scope</li> </ul>	<ul style="list-style-type: none"> <li>• Trouble tickets that are canceled at the CLEC request</li> <li>• ILEC trouble reports associated with administrative service</li> <li>• Instances where the CLEC or an ILEC customer requests that a ticket be "held open" for monitoring.</li> </ul>



## Service Quality Measurements

### Measurement Detail

		<ul style="list-style-type: none"> <li>Subsequent Reports (additional reports on an already open ticket).</li> </ul>
<b>Data Retained Relating To CLEC Experience:</b> <ul style="list-style-type: none"> <li>Report Month</li> <li>CLEC Ticket #</li> <li>Ticket Submission Time</li> <li>Ticket Submission Date</li> <li>Ticket Completion Time</li> <li>Ticket Completion Date</li> <li>Service Type</li> <li>WTN or CKTID (a unique identifier for elements combined in a service configuration)</li> <li>Disposition and Cause</li> <li>Geographic Scope</li> </ul>		<b>Data Retained Relating To ILEC Performance:</b> <ul style="list-style-type: none"> <li>Report Month</li> <li>Average Restoral Interval</li> <li>Standard Error for the Average Restoral Interval</li> <li>Service Type</li> <li>Disposition and Cause</li> <li>Geographic Scope</li> </ul>
<b>Performance Standard in Absence of ILEC Results:</b>	<p>If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete:</p> <ul style="list-style-type: none"> <li>Out of Service conditions where dispatch is required: <ul style="list-style-type: none"> <li>≥90% resolved within 4 hours</li> <li>≥95% resolved within 8 hours</li> <li>≥99% resolved within 16 hours</li> </ul> </li> <li>Out of Service conditions where no dispatch is required: <ul style="list-style-type: none"> <li>≥85% resolved within 2 hours</li> <li>≥95% resolved within 3 hours</li> <li>≥99% resolved within 4 hours</li> </ul> </li> <li>≥ all other troubles resolved within 24 hours</li> </ul>	

## Service Quality Measurements

### Measurement Detail

Function:	Frequency of Repeat Troubles
<b>Business Implications:</b>	Customers are keenly aware of the effectiveness of repair activities. First time troubles are sufficiently annoying and disruptive. When the trouble recurs within a short time frame it is even more dissatisfying. This measurement, when gathered for both the ILEC and CLEC can establish whether or not CLECs are competitively disadvantaged (vis-à-vis the ILEC) as a result of experiencing more frequent occurrence of customer troubles not being resolved in the first attempt to repair the trouble. Differences in this measure may indicate that the CLEC is receiving inferior maintenance support in the initial resolution of troubles or, in the alternative, it may indicate that the network components supplied are of inferior quality.
<b>Measurement Methodology:</b>	<p><b>Repeat Trouble Rate = (Count of Service Access Line Generating More Than One Trouble Within a Continuous 30 Day Period) / (Number of Reports in the Report Period) x 100</b></p> <p><b>For CLEC Results:</b> The repeat trouble rate measure is computed by accumulating the number of instances where a trouble ticket is submitted by a CLEC to the ILEC for a service arrangement that had at least one prior trouble ticket any time in the 30 calendar days preceding the creation of the current trouble ticket. The number of repeat troubles are accumulated for the reporting period by service type. The count of repeat troubles, by service type, is divided by the count of initial trouble reports (by service type) received during the report period.</p> <p><b>For ILEC Results:</b> Same computation as for CLECs.</p> <p><b>Other Clarifications and Qualification:</b></p> <ul style="list-style-type: none"> <li>• No trouble types excluded (for example, trouble dispositions of "no access" are included)</li> <li>• Unbundled loops or UNE combination involving and unbundled loops are considered a "service access line".</li> <li>• The "same service arrangement" means a trouble report being reported for the same telephone number or the same circuit identifier.</li> <li>• The trouble resolution need not be identical between the repeated reports for the incident to be counted as a repeated trouble.</li> </ul>
Reporting Dimensions:	Excluded Situations:
<ul style="list-style-type: none"> <li>• Service - Standard Service Groupings (See Appendix A)</li> <li>• Disposition and Cause (See Appendix A)</li> <li>• Geographic Scope</li> </ul>	<ul style="list-style-type: none"> <li>• Trouble tickets that are canceled at the CLEC request</li> <li>• ILEC trouble reports associated with administrative service</li> <li>• Instances where the CLEC or an ILEC customer requests that a ticket be "held open" for monitoring.</li> <li>• Subsequent trouble report(s) on a maintenance ticket that has (have) not been reported as resolved (or closed)</li> </ul>



## Service Quality Measurements

### Measurement Detail

Data Retained Relating To CLEC Experiences:		Data Retained Relating To ILEC Performance:	
<ul style="list-style-type: none"> <li>• Report Month</li> <li>• CLEC Ticket #</li> <li>• Ticket Submission Time</li> <li>• Ticket Submission Date</li> <li>• Ticket Completion Time</li> <li>• Ticket Completion Date</li> <li>• Service Type</li> <li>• WTN or CKTID (a unique identifier for elements combined in a service configuration)</li> <li>• Disposition and Cause</li> <li>• Geographic Scope</li> </ul>		<ul style="list-style-type: none"> <li>• Report Month</li> <li>• % repeat trouble</li> <li>• Service Type</li> <li>• Disposition and Cause</li> <li>• Geographic Scope</li> </ul>	
<b>Performance Standard in Absence of ILEC Results:</b>		<p>If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete:</p> <ul style="list-style-type: none"> <li>• Less than 1% of trouble reports, by service type, experience a repeat report, regardless of the trouble disposition, within a 30 day period.</li> </ul>	

## Service Quality Measurements

### Measurement Detail

<b>Function:</b>	<b>Frequency of Troubles (Troubles per 100 lines)</b>
<b>Business Implications:</b>	<p>Customers demand high quality of service performance from their supplier and differentials in performance are quickly recognized throughout the market place. Poor performance is difficult to overcome and may require lengthy periods of sustained superb performance in order to re-establish a product image that has been tarnished. When measured for both the ILEC and CLEC and compared, this measure can be used to establish that CLECs are not competitively disadvantaged, compared to ILEC, as a result of experiencing more frequent incidents of trouble reports. Disparity in this measure may indicate differences in the underlying quality of the network components supplied.</p>
<b>Measurement Methodology:</b>	<p><b>Trouble Rate = (Count of Initial &amp; Repeated Trouble Reports in the Current Period) / (Number of Service Access Line in Service at End of the Report Period) x 100</b></p> <p><b>For CLEC Results:</b> The frequency of trouble metric is computed by accumulating, by standard service grouping and disposition and cause, the total number of maintenance tickets logged by a CLEC (with the ILEC) during the reporting period. The resulting number of tickets for each disposition and cause is accumulated within each standard service grouping, is divided by the total number of "service access lines" existing for the CLEC at the end of the report period.</p> <p><b>For ILEC Results:</b> Same calculation as for the CLEC with the clarifications provided below.</p> <p><b>Other Clarifications and Qualification:</b></p> <ul style="list-style-type: none"> <li>• This measure is frequently a minimum service standard required by state commissions for monitoring ILEC performance.</li> <li>• There are no trouble types that are excluded from this measurement.</li> <li>• Unbundled loops or UNE combinations involving unbundled loops would be counted as a "service access line".</li> <li>• See the "Time to Restore" measurement for a discussion of the ILEC equivalent of "trouble tickets" and "trouble logging".</li> </ul>
<b>Reporting Dimensions:</b>	<b>Excluded Situations:</b>
<ul style="list-style-type: none"> <li>• Standard Service Groupings (See Appendix A)</li> <li>• Disposition and Cause (See Appendix A)</li> <li>• Geographic Scope</li> </ul>	<ul style="list-style-type: none"> <li>• Trouble tickets that are canceled at the CLEC request</li> <li>• ILEC trouble reports associated with administrative service</li> <li>• Instances where the CLEC or an ILEC customer requests a ticket be "held open" for monitoring.</li> </ul>

## Service Quality Measurements Measurement Detail

Data Retained Relating To CLEC Experience:		Data Retained Relating To ILEC Performance:	
<ul style="list-style-type: none"><li>• Report Month</li><li>• CLEC Ticket #</li><li>• Ticket Submission Time</li><li>• Ticket Submission Date</li><li>• Ticket Completion Time</li><li>• Ticket Completion Date</li><li>• Service Type</li><li>• WTN or CKTID (a unique identifier for elements combined in a service configuration)</li><li>• Disposition and Cause</li><li>• Geographic Scope</li></ul>		<ul style="list-style-type: none"><li>• Report Month</li><li>• Trouble Rate</li><li>• Service Type</li><li>• Disposition and Cause</li><li>• Geographic Scope</li></ul>	
Performance Standard in Absence of ILEC Results:	<p>If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete:</p> <ul style="list-style-type: none"><li>• Less than 1.5% of lines, by service type, experience a trouble in a report period.</li></ul>		

# Service Quality Measurements

## Measurement Detail

<b>Function:</b>	<b>Estimated Time To Restore Met</b>
<b>Business Implications:</b>	When customers experience trouble on working services, they naturally expect the services to be restored within the time frame promised. When such commitments are not fulfilled, an already unsatisfactory condition, in the customer's eyes, becomes even worse. When this measure is collected for the ILEC and CLEC and then compared, it can be used to establish that CLECs are receiving equally reliable (as compared to the ILEC operations) estimates of the time required to complete service repairs.
<b>Measurement Methodology:</b>	<p><b>Percentage of Customer Troubles Resolved Within Estimate = (Count of Customer Troubles Resolved By The Quoted Resolution Time and Date) / (Count of Customer Troubles Tickets Closed) x 100</b></p> <p><b>For CLEC Results:</b> The computation of the measure is as follows: The quoted repair completion date and time is compared to the actual repair date and time (ticket closure as defined in Time to Restore metric). In each instance where the actual repair date and time is on or before the initially provided estimated or quoted date and time to restore, the count of "troubles resolved within estimate" is incremented by one for the relevant "service type" and "disposition and cause". The resulting count is divided by the total number of troubles resolved (for the consistent service type - disposition and cause), for the report period, where a estimated interval was provided or a standard interval existed.</p> <p><b>For ILEC Results:</b> Same as for CLEC.</p> <p><b>Other Clarifications and Qualification:</b></p> <ul style="list-style-type: none"> <li>• The ILEC analog for this measure is derived by comparing the actual date and time of ILEC trouble ticket closure compared to the projected trouble clearance date and time established through the ILEC agent's on-line interaction with the work management system of the ILEC, regardless of whether or not the ILEC currently quotes this information to its retail customer.</li> <li>• There are no trouble types that are excluded from this measurement.</li> <li>• See the "Time To Restore" measurement for discussion of analogous ILEC maintenance activities (e.g., trouble resolution).</li> <li>• The "quoted" or "estimated" time to restore is the actual schedule time projection returned by the ILEC work management system or the standardized repair interval that the ILEC uses for its own operations when equivalent service arrangements are involved.</li> <li>• If the ILEC supplies only the estimated repair interval, then the estimated date and time of repair is determined by adding the repair interval to the date and time that the CLEC logged the repair request with the ILEC.</li> </ul>
<b>Reporting Dimensions:</b>	<b>Excluded Situations:</b>
<ul style="list-style-type: none"> <li>• Service - Standard Service Groupings (See Appendix A)</li> <li>• Disposition and Cause (see Appendix A)</li> <li>• Geographic Scope</li> </ul>	<ul style="list-style-type: none"> <li>• Trouble tickets that are canceled at the CLEC request</li> <li>• ILEC trouble reports associated with administrative service</li> <li>• Instances where the CLEC or an ILEC customer requests a ticket be "held open" for monitoring.</li> </ul>

# Service Quality Measurements

## Measurement Detail

<b>Function:</b>	<b>Center Responsiveness</b>
<b>Business Implications:</b>	<p>When CLECs experience operational problems dealing with ILEC processes or interfaces, prompt support by the ILEC is required in order to assure that the CLEC customers are not adversely impacted. Any delay in responding to CLEC center requests for support (e.g., request for a vanity telephone number) will, in turn, adversely impact the CLEC retail customer who may be holding on-line with the CLEC customer service agent. This measure, when gathered for both the CLEC and ILEC, monitors that ILEC handling of support calls from CLECs is at least as responsive as for calls by ILEC retail customers seeking assistance (e.g., calling the business office of the ILEC or call the ILEC to report service repair issues).</p>
<b>Measurement Methodology:</b>	<p><b>Mean Time to Answer Calls</b> = <math>\Sigma [(Date\ and\ Time\ of\ Call\ Answer) - (Date\ and\ Time\ of\ Call\ Receipt)] / (Total\ Calls\ Answered\ by\ Center)</math></p> <p><b>Call Abandonment Rate</b> = <math>(Count\ of\ Calls\ Terminated\ Before\ Answer\ During\ the\ Reporting\ Period) / (Count\ of\ All\ Calls\ Placed\ in\ Queue\ During\ the\ Reporting\ Period)</math></p> <p><b>For CLEC Results:</b></p> <p>Speed of answer (mean time to answer calls) and call abandonment rates are monitored through the call management technology utilized to distribute calls to ILEC agents supporting CLEC activities (i.e., call receipt personnel staffing ILEC support centers intended for CLEC use). Results for each measure are to be provided separately for each center handling CLEC inquiries. If centers deployed by the ILEC support multiple functions (e.g., both maintenance and provisioning) then the results for each function supported should be separately reported, if feasible.</p> <p><u>Speed of Answer</u> is determined by measuring and accumulating the elapsed time from the entry of a CLEC call into the ILEC call management system until the CLEC call is transferred to the ILEC personnel assigned to handling CLEC calls for assistance. The elapsed time is measured in seconds and tenths of seconds rounded to the nearest tenth of a second.</p> <p>The <u>Call Abandonment Rate</u> is also monitored through the call management technology for the CLEC service agents. The number of calls received by the call distribution system is counted for the reporting period, regardless whether the call actually is transferred to an agent for processing. In addition, a count is accumulated of all calls received into the call distribution system that are subsequently terminated by the calling party or due to equipment failure before transfer to the service agent for processing. This call termination may occur at any point (e.g., the call may be within an Automatic Call Distributor, within a Voice Response Unit, in an answer queue, or at any other point in the call management system.)</p> <p><b>For ILEC Results:</b> Both <u>Speed of Answer</u> and <u>Call Abandonment Rate</u>, as it relates to the ILEC, will be measured in an identical manner as described for the CLEC. The results for the ILEC business office operations and its repair bureau operations should be separately accumulated, computed and retained. Where call receipt for such operations are commingled and inseparable, then only a single results for each</p>

## Service Quality Measurements

### Measurement Detail

Data Retained Relating To CLEC Experience:		Data Retained Relating To ILEC Performance:	
<ul style="list-style-type: none"> <li>• Report Month</li> <li>• CLEC Ticket #</li> <li>• Ticket Submission Time</li> <li>• Ticket Submission Date</li> <li>• Ticket Completion Time</li> <li>• Ticket Completion Date</li> <li>• Service Type</li> <li>• WTN or CKTID (a unique identifier for elements combined in a service configuration)</li> <li>• Disposition and Cause</li> <li>• Geographic Scope</li> </ul>		<ul style="list-style-type: none"> <li>• Report Month</li> <li>• Percentage of Customer Troubles Resolved Within Estimate</li> <li>• Service Type</li> <li>• Disposition and Cause</li> <li>• Geographic Scope</li> </ul>	
<b>Performance Standard in Absence of ILEC Results:</b>		<p>If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete:</p> <ul style="list-style-type: none"> <li>• Greater than 99% of a maintenance problems, by service type, are corrected by the quoted or estimated date and time of repair.</li> </ul>	

# Service Quality Measurements

## Measurement Detail

General (GE)

<b>Function:</b>	Systems Availability
<b>Business Implications:</b>	Access to essential business functionality, supported by OSS of the ILEC, is absolutely essential to CLEC operations. This measure monitors that such OSS functionality is at least as accessible to the CLEC as to the ILEC.
<b>Measurement Methodology:</b>	<p><b>% System Availability</b> = [(Hours Functionality is Available to CLECs During Report Period) / (Number of Hours Functionality was Scheduled to be Available During the Period)] x 100</p> <p><b>For CLEC Results:</b> The total "number of hours functionality was scheduled to be available" is the cumulative number of hours (by date and time on a 24 hour clock) over which the ILEC planned to offer and support CLEC access to ILEC OSS functionality during the reporting period. The ILEC must provide a minimum advance notice of one reporting period regarding availability plans and such plans must be interface-specific. If scheduled availability is not provided with at least one report period advance notice then the default availability for the subsequent reporting period will be seven days per week, 24 hours per day.</p> <p>"Hours Functionality is Available" is the actual number of hours, during scheduled available time, that the ILEC gateway or interface is capable of accepting CLEC transactions or data files for processing in the gateway / interface and supporting OSS.</p> <p>The actual time available is divided by the scheduled time available and then multiplied by 100 to produce the "% system availability" measure. The "% system availability" measure is required for each unique interface type offered by the ILEC.</p> <p><b>For ILEC Results:</b> Each OSS of the ILEC that is employed in the support of CLEC operations must first be identified by supported functional area (e.g., pre-ordering, ordering and provisioning, repair and maintenance and billing) with such mapping disclosed to the CLECs. The "available time" and "scheduled available time" is gathered for each of the identified ILEC OSS during the report period. The OSS function availability is computed based upon the weighted average availability of the subtending support OSS. That is, the available time for each OSS supporting a functional area is accumulated over the report period and then divided by the summation of the scheduled available time for those same supporting OSS.</p> <p><b>Other Clarifications and Qualification:</b></p> <ul style="list-style-type: none"> <li>• The ILEC analogs for this performance measure are the internal measures of system downtime (up time) typically established between the ILEC Systems Management Organization and the client organizations.</li> <li>• OSS scheduled and available time may be utilized in the computation of more than one functional area.</li> <li>• Parity exists if the CLEC "% system availability" <math>\geq</math> ILEC function availability for the functionality accessed by the CLEC.</li> <li>• "Capable of accepting" must have a meaning consistent with the ILEC definition of down time, whether planned or unplanned, for internal ILEC systems having a comparable potential for customer impact.</li> <li>• Time is measured in hours and tenths of hours rounded to the nearest tenth of an hour.</li> </ul>

## Service Quality Measurements Measurement Detail

<b>Reporting Dimensions:</b>		<b>Excluded Situations:</b>	
<ul style="list-style-type: none"><li>• Interface type offered for each functional area (See Appendix A)</li><li>• Business Period (8:00AM to 8:00PM local time versus 8:00PM to 8:00AM , weekends and holidays)</li></ul>		<ul style="list-style-type: none"><li>• None</li></ul>	
<b>Data Retained Relating To CLEC Experience:</b>		<b>Data Retained Relating To ILEC Performance:</b>	
<ul style="list-style-type: none"><li>• Report Month</li><li>• Interface Type (Identifies each unique interface available to CLECs)</li><li>• Scheduled Hour Available</li><li>• Actual Hours Available</li></ul>		<ul style="list-style-type: none"><li>• Report Month</li><li>• Functionality Identification</li><li>• % Availability of Functionality</li></ul>	
<b>Performance Standard in Absence of ILEC Results:</b>	<p>If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete:</p> <ul style="list-style-type: none"><li>• Less than 0.1% of unplanned down time, by interface type, during either business period .</li></ul>		



## Service Quality Measurements Measurement Detail

	<p>measure will be generated and serve as the comparative result for both the CLEC repair support and the CLEC provisioning support results.</p> <p><b>Other Clarifications and Qualification:</b></p> <ul style="list-style-type: none"> <li>• Speed of Answer minimum service standards, established in many states for business office, maintenance center, and/or operator services represent a similar ILEC measure and are derived from identical data (although the result displayed may be in comparison to a pre-established standard performance minimum)</li> <li>• For ILEC and CLEC calls, an ILEC Agent answering and placing the caller on hold does not stop timing for purposes of the speed of answer interval.</li> <li>• A Voice Response Unit does not stop the timing for purposes of the speed of answer interval. For a call to be considered answered, the live ILEC Agent must handle the CLEC request.</li> <li>• Results may be reported for the CLEC industry in aggregate to the extent separate carrier-specific support centers are not provided. If separate centers are provided (either for an individual CLEC or a group of CLECs) then results should be gathered and supplied for each center and reported to the CLEC(s) based upon the center providing the specific CLEC's support.</li> <li>• If the ILEC call management technology cannot measure speed of answer for on a call-specific basis, then an alternate methodology that simulates speed of answer based upon the average time for component parts of the call (e.g., queue to IVR + IVR to queue + queue to agent answer) can be utilized by mutual consent of the ILEC and CLECs.</li> </ul>
<p><b>Reporting Dimensions:</b></p> <ul style="list-style-type: none"> <li>• Support Center Type (i.e., Center supporting CLEC maintenance, Center supporting CLEC provisioning, ILEC Center supporting retail customer maintenance calls, ILEC Center supporting business office inquiries).</li> </ul>	<p><b>Excluded Situations:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>
<p><b>Data Retained Relating To CLEC Experience:</b></p> <ul style="list-style-type: none"> <li>• Month</li> <li>• Center Type</li> <li>• Mean Speed of Answer</li> <li>• Standard Error for Mean Speed of Answer</li> <li>• Call Abandonment Rate</li> </ul>	<p><b>Data Retained Relating To ILEC Performance:</b></p> <ul style="list-style-type: none"> <li>• Month</li> <li>• Center Type</li> <li>• Mean Speed of Answer</li> <li>• Standard Error for Mean Speed of Answer</li> <li>• Call Abandonment Rate</li> </ul>
<p><b>Performance Standard in Absence of ILEC Results:</b></p>	<p>If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete:</p> <ul style="list-style-type: none"> <li>• Greater than 95% of the calls, by center, are answered within 20 seconds</li> <li>• All calls are answered within 30 seconds.</li> </ul>

# Service Quality Measurements

## Measurement Detail

### Billing (BI)

<b>Function:</b>	<b>Timeliness Of Billing Record Delivery</b>
<b>Business Implications:</b>	Regardless whether the billing is for retail customer or exchange access service, the timing of ILEC delivery of billing records must provide CLECs with the opportunity to delivery timely bills in as timely a manner as the ILEC; otherwise artificial competitive advantage would be realized by the ILEC. The "mean time to provide recorded usage" and the "mean time to deliver invoices" monitor this situation.
<b>Measurement Methodology:</b>	<p><b>Mean Time to Provide Recorded Usage Records</b> = <math>\{ \Sigma[(\text{Data Set Transmission Date}) - (\text{Date of Message Recording})] / (\text{Count of All Messages Transmitted in Reporting Period}) \}</math></p> <p><b>Mean Time to Deliver Invoices</b> = <math>\{ \Sigma[(\text{Invoice Transmission Date}) - (\text{Date of Scheduled Bill Cycle Close})] / (\text{Count of Invoices Transmitted in Reporting Period}) \}</math></p> <p><b>For CLEC Results:</b></p> <p><u>Usage Records:</u> This measure captures the elapsed time between the recording of usage data generated either by CLEC retail customers or by CLEC access customers (by the AMA recording equipment associated with the ILEC switch) and the time when the data set, in a compliant format, is successfully transmitted to the CLEC. For each usage record, the calendar date and time of usage recording is compared to the calendar date and time of successful completion of data set transmission to the CLEC. The number of hours and tenths of hours elapsed between message recording and data set transmission will constitute the elapsed delivery time. The elapsed delivery time is accumulated for each usage record with the resulting total number of hours accumulated being divided by the number of complete usage records in all the data sets transmitted.</p> <p><u>Invoices:</u> This measure captures the elapsed number of days between the scheduled close of a Bill Cycle and the ILEC's successful transmission of the associated invoice to the CLEC. For each invoice, the calendar date of the scheduled close of Bill Cycle is compared to the calendar date that successful invoice transmission to the CLEC completes. The number of calendar days elapsed between scheduled Bill Cycle close and completion of invoice transmission will constitute the elapsed delivery time. The elapsed delivery time is accumulated for each invoice with the resulting total number of days accumulated being divided by the number of complete invoices sent in the reporting period.</p> <p><b>For ILEC Results:</b> Identical computations are made for the ILEC with the clarifications provided below.</p> <p><b>Other Clarifications and Qualification:</b></p> <ul style="list-style-type: none"> <li>The elapsed time for delivery of ILEC usage records is measured from the time of message recording, as captured on the AMA tape of the ILEC, to the time the reformatting of the AMA tape to an EMR format (or equivalent) is completed.</li> <li>The elapsed time for ILEC invoice delivery is measured from the scheduled</li> </ul>

## Service Quality Measurements

### Measurement Detail

	<p>close date of the retail customer bill cycle to the production of the customer bill in electronic format (i.e., bill is ready for printing) appropriate for delivery to retail customers regardless whether or not such a distribution is immediately undertaken.</p> <ul style="list-style-type: none"> <li>• Mean time to deliver usage records is to be reported separately for end user usage, access related usage.</li> <li>• Alternately billed usage (e.g., bill-to-third party, collect, credit card usage processed through CMDs), although commingled on the daily usage feeds to the CLEC, is to be monitored separately from the directly billed usage with respect to timeliness because of the different and more time consuming settlements and clearing process associated with such usage.</li> </ul>
<b>Reporting Dimensions:</b> <ul style="list-style-type: none"> <li>• End user usage records</li> <li>• Access usage records</li> <li>• Alternately billed usage records</li> <li>• Wholesale Bill Invoices (TSR)</li> <li>• Unbundled Element Invoices (UNE)</li> </ul>	<b>Excluded Situations:</b> <ul style="list-style-type: none"> <li>• Any usage records or invoices rejected due to formatting or content errors.</li> </ul>
<b>Data Retained Relating To CLEC Experience:</b> <ul style="list-style-type: none"> <li>• Report Monthly</li> <li>• Record Type or Invoice Type</li> <li>• Mean Delivery Interval</li> <li>• Standard Error of Delivery Interval</li> </ul>	<b>Data Retained Relating To ILEC Performance:</b> <ul style="list-style-type: none"> <li>• Report Month</li> <li>• Record Type or Invoice Type</li> <li>• Mean Delivery Interval</li> <li>• Standard Error of Delivery Interval</li> </ul>
<b>Performance Standard in Absence of ILEC Results:</b>	<p>If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete:</p> <ul style="list-style-type: none"> <li>• For usage records, separately for access usage and end user usage: <ul style="list-style-type: none"> <li>• Greater than 99.9% records received within 24 hours of usage recording</li> <li>• All usage is received within 48 hours of usage recording</li> </ul> </li> <li>• Greater than 99.95% of services resale invoices received within 10 calendar days of bill cycle close</li> <li>• Greater than 99.95% of wholesale (UNE) invoices received within 10 calendar days of bill cycle close.</li> </ul>

## Service Quality Measurements Measurement Detail

<b>Function:</b>	Accuracy of Billing Records
<b>Business Implications:</b>	<p>The accuracy of billing records affects the accuracy of the billing ultimately delivered to local service customers, whether retail service or exchange access service customers. Billing for the elements from which CLEC services are constructed must be validated to assure that only correct charges are paid. This validation is necessary to assure that the cost structure for services is not inflated. Furthermore, charges such as "time and material" related charges may be on the invoice and need to be promptly passed on to customers (by CLECs) to avoid dissatisfaction regarding the timeliness of CLEC billing and to minimize customer inquiries on late billing. Fair competition requires that the accuracy of billing records (both usage and invoices) delivered by the ILEC to the CLEC must provide CLECs with the opportunity to delivery bills at least as accurate as those delivered by the ILEC. Producing and comparing this measurement result for both the ILEC and CLEC allows a determination as to whether or not parity exists.</p>
<b>Measurement Methodology:</b>	<p><b>Invoice Accuracy</b> = [(Number of Invoices Delivered in the Reporting Period that Have Complete Information, Reflect Accurate Calculations and are Properly Formatted) / Total Number of Invoices Issued in the Reporting Period )] x 100</p> <p><b>Usage Accuracy</b> = [(Number of Usage Records Delivered in the Reporting Period That Reflected Complete Information Content and Proper Formatting) / (Total Number of Usage Records Transmitted)] x 100</p> <p><b>For CLEC Results:</b> The completeness of content, accuracy of information and conformance of formatting will be determined based upon the terms of the individual CLEC interconnection agreements with the ILECs. The ILEC will establish a quality control process that is disclosed to CLECs and that is no less rigorous than the most rigorous quality monitoring established in the ILEC billing service contracts for long distance service providers. The quality monitoring process must be disclosed in advance and process auditing must be permitted. The records and invoices delivered by the ILEC must simultaneously meet the standards relating to content, accuracy and formatting in order to be counted as accurate. Each of the above measurements, is expressed as a ratio (expressed as a percentage) of accurate records (or invoices) to the total records (or invoices) delivered.</p> <p><b>For ILEC Results:</b> The results computation for the ILEC is identical to that described for the CLECs. The usage accuracy determination is based upon comparison of the usage records, following conversion to the EMR (or equivalent) format as compared to the internally established content and formatting requirements. Likewise, the accuracy measure for invoice delivery will be based upon a statistically reliable comparison of ILEC invoices to the content, calculation methodology and formatting standards of the ILEC. Separate comparisons are to be made for retail service invoices and access invoices with the results compared to wholesale (TSR) and UNE invoices, respectively.</p> <p><b>Other Clarifications and Qualification:</b></p> <ul style="list-style-type: none"> <li>The usage accuracy measure identified here is similar to the type of measures that the ILEC commonly has instituted in service contracted established with long distance service suppliers who use ILEC billing</li> </ul>

## Service Quality Measurements Measurement Detail

	<p>services.</p> <ul style="list-style-type: none"> <li>The wholesale invoice accuracy identified here is analogous to the measures contained within the Billing Quality Assurance Programs that the ILECs have with IXCs for monitoring access billing quality. If a sampling process is used to monitor accuracy, then the study results must be reconfirmed no less than quarterly</li> </ul>
<b>Reporting Dimensions:</b> <ul style="list-style-type: none"> <li>End user usage records</li> <li>Access usage records</li> <li>Alternately billed usage records</li> <li>Wholesale Bill Invoices (TSR)</li> <li>Unbundled Element Invoices (UNE)</li> </ul>	<b>Excluded Situations:</b> <ul style="list-style-type: none"> <li>None</li> </ul>
<b>Data Retained Relating To CLEC Experience:</b> <ul style="list-style-type: none"> <li>Report Month</li> <li>Record or Invoice Type (per Reporting Dimensions)</li> <li>Accuracy</li> </ul>	<b>Data Retained Relating To ILEC Performance:</b> <ul style="list-style-type: none"> <li>Report Month</li> <li>Record or Invoice Type (per Reporting Dimensions)</li> <li>Accuracy</li> </ul>
<b>Performance Standard in Absence of ILEC Results:</b>	<p>If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete:</p> <ul style="list-style-type: none"> <li>Greater than 98% of usage records transmitted, by usage type, reflect the agreed upon format and contain complete information.</li> <li>Greater than 98% of wholesale bill, by invoice type, are financially accurate</li> </ul>

# Service Quality Measurements

## Measurement Detail

### Operator Services and Directory Assistance (OS, DA)

<b>Function:</b>	<b>Speed To Answer</b>
<b>Business Implications:</b>	In order to assure that an unjustified competitive advantage is not created for the ILEC, the speed of answer delivered to CLEC retail customers, when the ILEC provides Operator Services or Directory Services on behalf of the CLEC, must be no slower than the speed of answer that the ILEC delivers to its own retail customers of equivalent local services.
<b>Measurement Methodology:</b>	<p><b>Mean Time To Answer</b> = <math>\frac{\sum(\text{Date and Time of Call Answer}) - (\text{Date and Time of Call Receipt})}{(\text{Total Calls Answered on Behalf of CLECs in Reporting Period})}</math></p> <p><b>For CLEC Results:</b> Speed of answer and call abandonment rates are monitored through the call management technology used to distribute calls to ILEC agents supporting CLEC activities (i.e., call receipt personnel staffing Directory Assistance or Operator Service Positions).</p> <p><u>Speed of Answer</u> is determined by measuring and accumulating the elapsed time from the entry of a CLEC retail customer call into the ILEC call management system queue until the CLEC retail customer call is transferred to the ILEC personnel assigned to handling CLEC calls for assistance (whether DA or OS). The elapsed time is measured in seconds and tenths of seconds rounded to the nearest tenth of a second.</p> <p><b>For ILEC Results:</b> Identical measures as described for the CLEC with the clarification provided below.</p> <p><b>Other Clarifications and Qualification:</b></p> <ul style="list-style-type: none"> <li>• This measure is directly analogous to speed of answer minimum service standards established within many states.</li> <li>• Results may be reported for the CLEC industry in aggregate.</li> <li>• See the "Center Responsiveness" measurement for the treatment of the situation where ILEC call management technology cannot measure speed of answer on a call basis from receipt to answer.</li> </ul>
<b>Reporting Dimensions:</b>	<b>Excluded Situations:</b>
<ul style="list-style-type: none"> <li>• Operator Services in Aggregate</li> <li>• Directory Assistance</li> <li>• Processing Method (human versus machine processes)</li> </ul>	<ul style="list-style-type: none"> <li>• Call abandoned by customers prior to answer by the ILEC OS or DA operator</li> </ul>
<b>Data Retained Relating To CLEC Experience:</b>	<b>Data Retained Relating To ILEC Performance:</b>
<ul style="list-style-type: none"> <li>• Month</li> <li>• Call Type (OS or DA)</li> <li>• Mean Speed of Answer</li> <li>• Standard Error for Mean Speed of Answer</li> </ul>	<ul style="list-style-type: none"> <li>• Month</li> <li>• Call Type (OS or DA)</li> <li>• Mean Speed of Answer</li> <li>• Standard Error for Mean Speed of Answer</li> </ul>

## Service Quality Measurements

### Measurement Detail

<b>Performance Standard in Absence of ILEC Results:</b>	<p>If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete:</p> <ul style="list-style-type: none"><li>• More than 90% of call involving answer by a "live" agent, separately for OS and DA services, are answered within 10 seconds.</li><li>• All calls involving answer by a Voice Response Unit, separately for OS and DA services, are answered within 2 seconds.</li></ul>
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## Service Quality Measurements Measurement Detail

### Network Performance (NP)

<b>Function:</b>	<b>Network Performance Parity</b>
<b>Business Implications:</b>	The perceived quality of CLEC retail services, particularly when either ILEC services are resold or UNE combinations are employed, will be heavily influenced by the underlying quality of the ILEC network performance. Customers experience the quality of the service provider each time services are used. This metric monitors, when collect for both the CLEC and ILEC and then compared will help show whether CLEC network performance is at least at parity with ILEC network performance.
<b>Measurement Methodology:</b>	<p><b>Network Performance Parity = <math>\Sigma(\text{Network Performance Parameter Result})/(\text{Number of Tests Conducted})</math></b></p> <p><b>For CLEC Results:</b> Based upon a random and statistically reliable (at a preset level) sample of network configurations employed by the CLEC, the network performance parameter (as indicated in the reporting dimension) is monitored based upon generally accepted testing procedures and the resulting parameter value(s) recorded. The measured values are accumulated across the sample base and the mean and associated variance computed</p> <p><b>For ILEC Results:</b> The approach is identical to that described for the CLEC, except that the network performance is measured only for representative ILEC service configurations.</p> <p><b>Other Clarifications and Qualification:</b></p>
<b>Reporting Dimensions:</b>	<b>Excluded Situations:</b>
<ul style="list-style-type: none"> <li>• Transmission Quality (See Appendix A)</li> <li>• Speed of Connection (See Appendix A)</li> <li>• Reliability (See Appendix A)</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> </ul>
<b>Data Retained Relating To CLEC Experience:</b>	<b>Data Retained Relating To ILEC Performance:</b>
<ul style="list-style-type: none"> <li>• Report Month</li> <li>• Reporting Dimension</li> <li>• Mean Performance Result</li> <li>• Standard Error of Mean Performance</li> <li>• Number of Data Points</li> <li>• Geographic scope</li> </ul>	<ul style="list-style-type: none"> <li>• Report Month</li> <li>• Reporting Dimension</li> <li>• Mean Performance Result</li> <li>• Standard Error of Mean Performance</li> <li>• Number of Data Points</li> <li>• Geographic scope</li> </ul>
<b>Performance Standard in Absence of ILEC Results:</b>	<p>If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete:</p> <ul style="list-style-type: none"> <li>• Performance Standards in this area are yet to be published.</li> </ul>



# Service Quality Measurements

## Measurement Detail

### Interconnection/Unbundled Elements and Combinations (IUE)

<b>Function:</b>	<b>Availability of Network Elements</b>
<b>Business Implications:</b>	As CLECs use individual elements as well as element combinations to deliver unique services, it is essential that the UNE functionality operate properly due to the crucial role played by such elements in providing quality retail services. This measure monitors individual network element or element combinations, that do not have an apparent retail analog, to assure that CLECs have a meaningful opportunity to compete through access to and use of element (or combination) functionality.
<b>Measurement Methodology:</b>	<p><b>Function Availability<sup>1</sup> = (Amount of Time<sup>1</sup> a Functionality is Useable<sup>1</sup> by a CLEC in a Specified Period)/(Total Time<sup>2</sup> Functionality Was Intended to Be Useable)</b></p> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>1. These measure may also be expressed in the negative, that is, in term of unavailability.</li> <li>2. In some instances, rather than time, the availability will be express in terms of transactions executed successfully compared to transactions attempted.</li> </ol> <p><b>For CLEC Results:</b> Availability will be measured for each unique UNE functionality (or combination of UNEs) that deliver a unique functionality that does not have a reasonable retail service analog. The number of times that the functionality executes properly will be shown in comparison to the number of times that the execution of the functionality was requested or initiated. Availability can apply to both physical and logical (e.g., database) elements. Physical element availability (e.g., links to databases, dedicated transport, etc.) will typically be expressed as the % of time that the functionality is useable compared to the total time in the period being observed. "Useable" will typically means that, when monitored, the element indicates readiness to operate (e.g., an electrical (or equivalent) continuity is detected, expected signaling is returned, etc.). Logical element availability will typically be expressed in terms of the number of transactions successfully executed (e.g., successful database updates, success query responses) compared to the number of transactions attempted.</p> <p>Illustrative examples of availability measures are shown below</p> <ul style="list-style-type: none"> <li>• A-link: minutes unavailable per year</li> <li>• D-link: seconds unavailable per year</li> <li>• databases: percentage of queries receiving a response</li> <li>• databases: percentage of transactions experiencing time-outs</li> <li>• databases: percentage of queries experiencing a return of unexpected values</li> <li>• routing: percentage of calls blocked</li> </ul> <p><b>For ILEC Results:</b> Identical measurements are performed where the ILEC employs the same or reasonably comparable functionality. Where such analogs do not exist, the ILEC is expected to establish benchmark performance levels jointly with the CLEC requesting the functionality.</p> <p><b>Other Clarifications and Qualification:</b></p>

## Service Quality Measurements Measurement Detail

	<ul style="list-style-type: none"> <li>• The preceding list of elements is illustrative and is not to be considered exhaustive</li> <li>• ILEC failure to provide timeliness performance that is no worse than what its own operations experience when using comparable functionality or, where comparable functionality is not employed, failure to meet or exceed parameters established as result of negotiation with the CLEC, constitutes failure to deliver nondiscriminatory access.</li> <li>• For each element or element combination requested, where a retail analog is not identified, the ILEC is expected to establish both a availability measure and an availability standard (ILEC functional analog or negotiated) unless the CLEC waives its right for such a measure.</li> <li>• Typical databases for which standards are currently expected are AIN, LIDB and 800 Number.</li> </ul>
<b>Reporting Dimensions:</b> <ul style="list-style-type: none"> <li>• By unique UNE or UNE combinations requested by the CLECs</li> </ul>	<b>Excluded Situations:</b> <ul style="list-style-type: none"> <li>• None</li> </ul>
<b>Data Retained Relating To CLEC Experience:</b> <ul style="list-style-type: none"> <li>• Month</li> <li>• Element or Element Combination Identification</li> <li>• Result for Agreed Upon Availability Parameter</li> </ul>	<b>Data Retained Relating To ILEC Performance:</b> <ul style="list-style-type: none"> <li>• To Be Determined</li> </ul>
<b>Performance Standard in Absence of ILEC Results:</b>	<p>If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete:</p> <ul style="list-style-type: none"> <li>• Performance Standards in this area are yet to be published.</li> </ul>

# Service Quality Measurements

## Measurement Detail

<b>Function:</b>	<b>Performance of Network Elements</b>
<b>Business Implications:</b>	As CLECs use individual elements (as well as element combinations) to deliver unique services, it is essential that the UNE functionality operates in a timely manner because of the crucial role played by such elements in providing quality retail services. This measure monitors individual network element (or element combinations), that do not have an apparent retail analog, to assure that CLECs are afforded a meaningful opportunity to compete when element (or combination) functionality is utilized.
<b>Measurement Methodology:</b>	<p><b>Timeliness of Element Performance = (Number of Times Functionality Executes Successfully Within the Established Timeliness Standard)/(Number of Times Execution of Functionality was Attempted)</b></p> <p><b>For CLEC Results:</b> Timeliness will be measured for each unique UNE (or combination of UNEs) that delivers unique. The number of times that the functionality executes properly within the established standard time frame will be accumulated and shown in comparison to the number of times that the execution of the functionality was requested or initiated.</p> <p>Illustrative examples of timeliness measures are shown below:</p> <ul style="list-style-type: none"> <li>• Database Updates: % completed within 24 hours</li> <li>• Post Dial Delay: % calls routed to CLEC OS platform within 2 seconds</li> </ul> <p><b>For ILEC Results:</b> Identical measurements are performed where the ILEC employs the same or reasonably comparable functionality. Where such analogs do not exist, the ILEC is expected to establish benchmark performance levels jointly with the CLEC requesting the functionality.</p> <p><b>Other Clarifications and Qualification:</b></p> <ul style="list-style-type: none"> <li>• The preceding list of elements is illustrative and is not to be considered exhaustive</li> <li>• ILEC failure to provide timeliness performance that is no worse than what its own operations experience when using comparable functionality or, where comparable functionality is not employed, failure to meet or exceed parameters established as result of negotiation with the CLEC, constitutes failure to deliver nondiscriminatory access.</li> <li>• For each element (or element combination) requested where a retail analog is not identified, the ILEC is expected to establish both a timeliness measure and a timeliness standard (ILEC functional analog or negotiated) jointly with the requesting CLEC unless that CLEC waives its right for such a measure.</li> <li>• Typical databases for which standards are currently expected are AIN, LIDB and 800 Number.</li> <li>• Comparisons of performance should be based upon the criteria for which the element was engineered. For example, if the element was engineered based upon average busy hour criteria, the comparison should be based upon the CLEC busy hour period (likewise for criteria such as busy day, busy season, or ten high days).</li> </ul>

## Service Quality Measurements Measurement Detail

<b>Reporting Dimensions:</b>		<b>Excluded Situations:</b>	
<ul style="list-style-type: none"><li>By unique UNE or UNE combinations requested by the CLECs</li></ul>		<ul style="list-style-type: none"><li>None</li></ul>	
<b>Data Retained Relating To CLEC Experience:</b>		<b>Data Retained Relating to ILEC Performance:</b>	
<ul style="list-style-type: none"><li>Month</li><li>Element or Element Combination Identification</li><li>Result for Agreed Upon Availability Parameter</li></ul>		<ul style="list-style-type: none"><li>To Be Determined</li></ul>	
<b>Performance Standard in Absence of ILEC Results:</b>	If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete: <ul style="list-style-type: none"><li>Performance Standards in this area are yet to be published.</li></ul>		

# Service Quality Measurements

## Measurements Detail

### Appendix A: Reporting Dimensions

<b>Standard Service Groupings:</b>	<ul style="list-style-type: none"> <li>• Resold Residence POTS</li> <li>• Resold Business POTS</li> <li>• Resold Residence ISDN</li> <li>• Resold Business ISDN</li> <li>• Resold Centrex/Centrex-like</li> <li>• Resold PBX trunks</li> <li>• Resold Channelized T1.5 service</li> <li>• Other Resold Services</li> <li>• UNE Platform (at least DS0 loop + local switch + transport elements)</li> <li>• UNE Channelized DS1 (DS1 loop + multiplexing)</li> <li>• Unbundled DS0 Loop</li> <li>• Unbundled DS1 Loop</li> <li>• Other Unbundled Loops</li> <li>• Unbundled Switch</li> <li>• Other UNEs</li> </ul>
<b>Standard Order Activities:</b>	<ul style="list-style-type: none"> <li>• New Service Installations</li> <li>• Service Migrations Without Changes</li> <li>• Service Migrations With Changes</li> <li>• Local Number Porting</li> <li>• Move and Changes Activities</li> <li>• Feature Changes</li> <li>• Service Disconnects</li> </ul>
<b>Pre-Ordering Query Types:</b>	<ul style="list-style-type: none"> <li>• Due Date Reservation</li> <li>• Feature Function Availability</li> <li>• Facility Availability</li> <li>• Street Address Validation</li> <li>• Service Availability Information</li> <li>• Appointment Scheduling</li> <li>• Customer Service Records</li> <li>• Telephone Number</li> <li>• Rejected or Failed Queries (regardless of type)</li> </ul>
<b>Transmission Quality Parameter:</b>	<ul style="list-style-type: none"> <li>• Subscriber Loop Loss</li> <li>• Signal to Noise Ratio</li> <li>• Idle Channel Circuit Noise</li> <li>• Loop-Circuit Balance</li> <li>• Circuit Notched Noise</li> <li>• Attenuation Distortion</li> </ul>

# Service Quality Measurements

## Measurements Detail

### Appendix A: Reporting Dimensions

<b>Speed of Connection Parameters:</b>	<ul style="list-style-type: none"> <li>• Dial Tone Delay</li> <li>• Post Dial Delay</li> <li>• Call Completion/Delivery Rate</li> </ul>
<b>Reliability Parameters:</b>	<ul style="list-style-type: none"> <li>• Network Incident Affecting &gt;5000 Blocked Calls</li> <li>• Network Incidents Affecting &gt;100,000 Blocked Calls</li> </ul>
<b>Disposition and Cause:</b>	<ul style="list-style-type: none"> <li>• Out of Service No Dispatch</li> <li>• Out of Service With Dispatch</li> <li>• Hold Open for Monitoring</li> <li>• Customer Premise Equipment Trouble (including Inside Wire)</li> <li>• No Trouble Found</li> <li>• Central Office Equipment</li> <li>• Interoffice Facilities</li> <li>• Loop/Access Line</li> <li>• All Other Troubles</li> <li>• No access</li> </ul> <p><i>"Out of Service" means that the customer has no dial tone.</i></p> <p><i>"Dispatch" means that ILEC repair personnel must be dispatched to a location outside an ILEC building (to customer premises or other off-site facilities) to resolve the trouble.</i></p>

# Service Quality Measurements

## Measurements Detail

### Appendix B: Glossary

#### A

Abandoned Call:	An abandoned call occurs when the caller hangs up after the call has been delivered, but before the receiving party has answered the call.
Attenuation Distortion:	Attenuation Distortion" should measure the variation in loss at different frequencies across the voice frequency spectrum (200Hz - 3400 Hz).

#### B

Call Completion Rate	The call completion rate for CLEC customers is determined by calculating the total number of calls placed by CLEC customers that were completed to the calling destination. The number of completed calls is then divided by the total # of call attempts made by CLEC customers during the reporting period.
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Call Delivery Rate	The <u>call delivery rate</u> for CLEC customers is determined by calculating the total # of calls received by CLEC customers. This number of delivered calls is then divided by the total # of call attempts received by the ILEC for termination CLEC customers.
--------------------	--

Completion:	A "completion" is the transaction that the ILEC sends to the CLEC to inform the CLEC that a requested order has been completed.
-------------	---

#### D

Data Response:

Dial Tone Delay:	The "Dial tone delay" is determined for each trial completed during the reporting period by computing the time that transpires from a customer's going off-hook and the receipt of dial tone from the servicing central office. It should be measured in seconds and tenths of seconds. "Post dial delay" for each trial is determined for each trial completed during the reporting period by computing the time that transpires from when the last digit is dialed until a valid response is received by the customer. It should be measured in seconds and tenths of seconds
------------------	---

#### E

#### F

FOC	A "FOC" is a Firm Order Confirmation notification, which is the transaction that the ILEC will send to the CLEC to confirm that an order can be completed.
-----	--

# Service Quality Measurements

## Measurements Detail

### Appendix B: Glossary

G

H

**Held Orders:** "Held orders" are orders that the ILEC has confirmed (an FOC was returned to the CLEC) and that are overdue.

I

**Idle Channel Circuit Noise** The idle channel circuit noise for each trial is determined for each trial completed during the reporting month by computing the difference between the noise that exists in the channel when no signals are present and the reference noise. The resulting accumulated idle channel circuit noise for all trials is divided by the total # of trials completed during the reporting period.

**Interface:** The "interface" is the ILEC interface that allows the CLEC to access the ILEC system

**Internal or  
Administrative Use:**

J

**Jeopardy** A "jeopardy" is a transaction that the ILEC sends to the CLEC to inform the CLEC that a previously FOC'd order cannot be processed as specified in the original FOC.

K

**Loop-circuit Balance** "Loops-circuit balance" should be measured in decibels and tenths of decibels above the reference noise. "Attenuation Distortion" should measure the variation in loss at different frequencies across the voice frequency spectrum (200Hz - 3400 Hz). It should be measured from the NID to the switch, and from the switch to the NID. It is measured by subtracting the loss at 1004 Hz from the loss at the frequency of interest, and should be reflected in tenths of decibels.

M

N

**Network Incident:** A "Network incident" is an unplanned network occurrence that results in blocked calls

O



# Service Quality Measurements

## Measurements Detail

### Appendix B: Glossary

#### P

**Post Dial Delay:** "Post dial delay" is the time that transpires from when the last digit is dialed until a valid response is received by the customer

#### Q

#### R

**Receipt of Order:**

**Return of Valid Completion:**

#### S

**Signal to Noise Ratio:** Signal to Noise ratio is the ratio of usable signal being transmitted to the noise or undesired signal.

**Subscriber Loop Loss:** The subscriber loop loss is by computing the difference between the strength of the signal as it enters the loop and the strength of the transmitted signal. Signal strength is measured in decibels rounded to the nearest tenth of a decibel. The resulting accumulated decimal strength is divided by the total number of trials completed during the reporting period.

**Subsequent Reports:** Customer trouble reports where the customer calls to check on the status of a previous trouble report (initial or repeat) that has not been cleared (closed or resolved) at the time of the call.

**Syntax Reject:** A "syntax reject" is the transaction that an ILEC will return to a CLEC when a the CLEC has submitted an order transaction that the ILEC's gateway cannot process due to violation of published rules for formatting or content.

**System:** The "system" is the combination of ILEC gateways, communications links, hardware and software that, in combination, is used to perform or support business functions or execute supporting transactions.

#### T

# Service Quality Measurements

## Measurements Detail

### Appendix B: Glossary

**Troubles** "Troubles" include all reported difficulties with performance of resold services or UNEs, whether the report is the initial or a repeated report, that the CLEC refers to the ILEC repair process/interface for resolution. Subsequent reports are categorized separately.

**Trouble Appointment:** A "trouble appointment" is a commitment made by the ILEC (to CLEC or to customer) to resolve a trouble.

U

V

W

X

Y

Z

**APPENDIX B**  
**ALTS SERVICE QUALITY MEASUREMENTS**

# Service Quality Measurements

## **ASSOCIATION FOR LOCAL TELECOMMUNICATIONS SERVICES (ALTS)**

December 9, 1997

Version 1.0

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# Service Quality Measurements

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# Service Quality Measurements

## Introduction

On August 8, 1996, the Federal Communications Commission released its First Report and Order in CC Docket No. 96-98 establishing regulations to implement the requirements of the Telecommunications Act of 1996. On February 12, 1997, the Local Competition Users Group (LCUG) issued their "Foundation for Local Competition: Operations Support Systems Requirements for Network Platform and Total Services Resale". This latter document began to structure the basic tenets for Service Parity, Performance Measurement, Electronic Interfaces, Systems Integrity Notification of Change, and Standards Adherence.

On July 30, 1997, the Association for Local Telecommunications Services (ALTS) submitted reply comments to the Federal Communications Commission (FCC), supporting the work of the LCUG group and requesting expedited rulemaking on the "Implementation of the Local Competition Provisions in the Telecommunications Act of 1996".

Through subsequent sub-committee work, LCUG has developed a "comprehensive list of potential measurements" to address ILEC (Incumbent Local Exchange Carrier) OSS (Operation Support System) performance in the areas of pre-ordering, ordering and provisioning, maintenance and repair, network performance, unbundled elements, operator services and directory assistance, system performance, service center availability, and billing. SQMs (Service Quality Measurements) goals have been established to provide "a nondiscrimination standard in the absence of directly comparative (actual) ILEC results" which the ILECs have been reluctant or unwilling to share.

ALTS fully supports the work done by the LCUG, but also recognizes that its CLEC membership may have somewhat differing needs. Therefore, ALTS has been working with a sub-committee of LCUG, as well as representatives from its own membership to form a WIPS (Workgroup on ILEC Performance Standards). The WIPS charter is to ensure that critical measurement needs are available for its membership in either the LCUG document, or the complementary ALTS document contained herein. It is not the intent of the WIPS to design an entirely new document, but merely to accept and support the concepts and measurements described in the LCUG SQM document, yet supplement those measurement categories that are of special interest to ALTS Membership. Indeed, sections of the following document are lifted directly out of the latest LCUG SQM Version 6.1, dated September 26, 1997, to reinforce the WIPS desire to build a common performance measurement foundation, rather than reinvent a new one.

See LCUG SQM document version 6.1 dated September 26, 1997

See Petition for Expedited Rulemaking (including Appendices A & B) by LCI International Telecom Corp. and Competitive Telecommunications Association (CompTel) dated May 30, 1997

# Service Quality Measurements

## Introduction

A basic requirement for the ALTS Service Quality Measurements (SQM) document is to adhere as much as possible to the format of LCUG Version 6.1. Therefore, as the ALTS addendum items are discussed, portions of the LCUG have been described as directly applicable. At the same time, it is clear to the ALTS membership that some issues, such as Network Performance, Emergency Services, and Collocation Provisioning need to be further defined and developed for measurement purposes. Overall, the ALTS document accomplishes the following:

- Recognizes, accepts and supports the basic measurement foundation established in the LCUG Version 6.1
- Modifies those LCUG sections, such as Order Provisioning, to include proposed ALTS measurements. For example, in the case of Order Provisioning, ALTS adds measures, within the LCUG framework, to consider Customer Desired Due Dates Met, and Interim Number Portability Coordinated Orders.
- Describes addendum items that complement LCUG direction, yet offer a new dimension to more clearly satisfy ALTS membership requirements.

The LCUG Version 6.1 “Measurement Plans” description and “Business Rules” described in the LCUG document Introduction will apply to the ALTS SQM document, as well. These include comments and definitions related to the following:

- Test for Parity
- Benchmarking Study Requirements
- Reporting Expectations and Report Format
- Delivery of Reports and Data
- Geographic Reporting
- Verification and Auditing
- Adaptation

# Service Quality Measurements

## Executive Overview

### **This Executive Overview section:**

- Acts as an addendum to the LCUG Executive Overview
- Provides a summary of the detailed requirements
- Enables a quick overview and understanding of the proposed ALTS measurements
- Summarizes the Business Implications associated with each measurement
- Accommodates a target audience who has a need to know about the measurements, but not the specific details

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# Service Quality Measurements

## Executive Overview

### Network Performance (NP)

<b>Function:</b>	
Network Interconnection Performance	
<b>Business Implications:</b>	
<ul style="list-style-type: none"><li>• The perceived quality of CLEC retail services, particularly when either ILEC services are resold or UNEs are employed, will be heavily influenced by the underlying quality of the ILEC performance</li><li>• Interconnection with the ILEC network, whether for facilities or equipment, needs to be provided at a level of quality that is equal to that which the ILEC provides itself, a subsidiary, an affiliate, or any other party</li><li>• The quality of CLEC service to customers is directly dependent on adequacy of trunking capacity at the ILEC</li></ul>	
<b>Measurements:</b>	<b>Results Detail:</b>
<ul style="list-style-type: none"><li>• Percent Trunk Blockage</li></ul>	<ul style="list-style-type: none"><li>• By end office to access tandem trunk group</li><li>• By final trunk group</li></ul>

# Service Quality Measurements

## Executive Overview

### Emergency Services (ES)

<b>Function:</b>	
Timeliness of Updating the Database	
<b>Business Implications:</b>	
<ul style="list-style-type: none"> <li>• ILECs historically “own” and control the 911 databases, which CLECs provide input to for their customers</li> <li>• Timely update of the 911/E911 database for customer location, telephone numbers, and selective router can indeed become a “life and death” situation as customers attempt to reach emergency help dialing 911/E911</li> <li>• CLECs can not offer Local Exchange Service without 911/E911 capability</li> </ul>	
<b>Measurements:</b>	<b>Results Detail:</b>
<ul style="list-style-type: none"> <li>• Mean Database Update Interval</li> <li>• Percent Updates Completed within 24 Hours</li> </ul>	<ul style="list-style-type: none"> <li>• By order update to include customer location and number</li> <li>• By order update to include selective router for proper dispatch center</li> </ul>

<b>Function:</b>	
Accuracy of Database	
<b>Business Implications:</b>	
<ul style="list-style-type: none"> <li>• Accurate update of the 911/E911 database for customer location, telephone numbers, and selective router can indeed become a “life and death” situation as customers attempt to reach emergency help dialing 911/E911</li> </ul>	
<b>Measurements:</b>	<b>Results Detail:</b>
<ul style="list-style-type: none"> <li>• Percent Database Accuracy</li> </ul>	<ul style="list-style-type: none"> <li>• By order update for Customer location, telephone number</li> <li>• By selective router</li> </ul>

<b>Function:</b>	
Provisioning of 911/E911 Trunks	
<b>Business Implications:</b>	
<ul style="list-style-type: none"> <li>• Customer service reaching 911/E911 is of critical importance</li> <li>• CLEC Customers need to be able to access the ILEC 911/E911 office on the first try due to the nature of their emergency situations</li> <li>• CLECs cannot offer Local Exchange Service without 911/E911 capability</li> </ul>	
<b>Measurements:</b>	<b>Results Detail:</b>
<ul style="list-style-type: none"> <li>• Mean interval to provision 911 trunks</li> <li>• Percent trunks completed within 15 days</li> <li>• Percent Trunk blockage</li> </ul>	<ul style="list-style-type: none"> <li>• By trunks added</li> <li>• Trunks measured every half-hour for peg count, overflow and usage.</li> <li>• Reported on a Busy Hour basis.</li> </ul>

# Service Quality Measurements

## Executive Overview

### Emergency Services (ES)

<b>Function:</b>	
System availability to the MSAG (Master Street Access Guide)	
<b>Business Implications:</b>	
<ul style="list-style-type: none"><li>• The 911/E911 capability works properly when, after having dialed "911", a customer calling into the Dispatch Center, can accurately have their telephone number associated with the correct street address, and thus receive dispatched help quickly</li><li>• CLECs need the addresses contained in the MSAG under the jurisdiction of the ILEC, to be able to associate the correct address with each telephone number</li><li>• Fast response time in obtaining MSAG information is important in order that the appropriate 911/E911 databases can be updated promptly and accurately</li></ul>	
<b>Measurements:</b>	<b>Results Detail:</b>
<ul style="list-style-type: none"><li>• Percent MSAG system availability</li></ul>	<ul style="list-style-type: none"><li>• By MSAG interface</li></ul>

# Service Quality Measurements

## Executive Overview

### Collocation Provisioning (CP)

<b>Function:</b>	
Physical and Virtual Collocation commitments Met	
<b>Business Implications:</b>	
<ul style="list-style-type: none"><li>• Due to the natural evolution of local telephone services over the years, ILECs own, rent, or lease buildings in most cities and towns. Many of these buildings house ILEC Central Office switches and equipment, giving them an advantage in the immediate marketplace. These same buildings often have extra space, due to technology compressing the size of equipment over time.</li><li>• In order to be able to compete and to install necessary equipment to do so, CLECs need access to space available in ILEC buildings and Remote locations</li><li>• ILECs need to respond in a timely fashion to CLEC requests</li><li>• To serve its own customers in a timely fashion, CLECs need to be able to count on ILECs meeting commitments for Physical and Virtual Collocation</li></ul>	
<b>Measurements:</b>	<b>Results Detail:</b>
<ul style="list-style-type: none"><li>• Mean response to request interval</li><li>• Percent responses received within 5 business days</li><li>• Percent of Physical Commitments Met</li><li>• Percent of Virtual Commitments Met</li></ul>	<ul style="list-style-type: none"><li>• By request</li><li>• By Central Office</li></ul>

# Service Quality Measurements

## Formula Quick Reference

	Measurement Description by Business Process:	Measurement Formula:
	<b>Network Performance</b>	
NP-2	Percent Trunk Blockage	Percent Trunk Blockage = $[(\text{Busy Hour Overflow Count}) / (\text{Busy Hour Peg Count}) \text{ During Report Period}] \times 100$
	<b>Emergency Services</b>	
ES-1	Mean Database Update Interval	Mean Database Update Interval = $\sum[(\text{Completion Date\&Time}) - (\text{Update Submission Date\&Time})] / (\text{Count of Updates Completed in Reporting Period})$
ES-2	Percent Updates Completed within 24 Hours	Percent Updates Completed within 24 Hours = $[(\text{Count of Updates Completed within 24 Hours}) / (\text{Count of Updates Completed in Reporting Period})] \times 100$
ES-3	Percent Database Accuracy	Percent Database Accuracy = $[(\text{Count of Updates Completed w/o error}) / (\text{Count of Updates Completed})] \times 100$
ES-4	Mean Interval to Provision 911/E911 trunks	Mean Interval to Provision 911/E911 Trunks = $\sum[(\text{Completion Date and Time}) - (\text{Trunk Order Submission Date and Time})] / (\text{Number of 911/E911 Trunks Completed in Reporting Period})$
ES-5	Percent trunks completed within 15 days	Percent Trunks Completed within 15 Days = $[(\text{Count of Trunks completed within 15 Days}) / (\text{Count of Trunks Completed in Reporting Period})] \times 100$
ES-6	Percent Trunk Blockage	Percent Trunk Blockage = $[(\text{Busy Hour Overflow Count}) / (\text{Busy Hour Peg Count}) \text{ during Report Period}] \times 100$
ES-7	Percent MSAG System Availability	Percent MSAG System Availability = $[(\text{Hours MSAG is Available to CLECs During Reporting Period}) / (\text{Number of Hours MSAG was Scheduled to be Available During Reporting Period})] \times 100$

# Service Quality Measurements

## Formula Quick Reference

	<b>Collocation Provisioning</b>	
CP-1	Mean Response to Request Interval	Mean Response to Request Interval = $\frac{\sum[(\text{Request Response Date\&Time}) - (\text{Request Submission Date\&Time})]}{(\text{Count of Requests Submitted in Reporting Period})}$
CP-2	Percent Responses Received within 5 Business Days	Percent Responses Received within 5 Business Days = $\frac{[(\text{Count of Responses received within 5 Business Days})]}{(\text{Count of Requests Submitted in Reporting Period})} \times 100$
CP-3	Percent Physical Commitments Met	Percent Physical Commitments Met = $\frac{[(\text{Count of Physical Commitments Met})]}{(\text{Count of Physical Commitments in Reporting Period})} \times 100$
CP-4	Percent Virtual Commitments Met	Percent Virtual Commitments Met = $\frac{[(\text{Count of Virtual Commitments Met})]}{(\text{Count of Virtual Commitments in Reporting Period})} \times 100$

# Service Quality Measurements

## Measurement Detail

### The Measurement Detail section:

- Acts as an addendum to the LCUG Measurement Detail
- Provides explicit detail information for each measurement
- Provides business reasons for the measurement, required data elements, analogs to the existing ILEC business function and comparative results suggestions
- Is targeted at those individuals who need to know and understand the detail categories and measurement methodologies

<b>Measurement Detail:</b>	Page 12
Ordering and Provisioning (OP)	Page 13
Network Performance (NP)	Page 16
Emergency Services (ES)	Page 18
Collocation Provisioning (CP)	Page 26
<i>Appendix A: Reporting Dimensions</i>	<i>Page 28</i>
<i>Appendix B: Glossary</i>	<i>Page 29</i>

# Service Quality Measurements

## Measurement Detail

### Ordering and Provisioning (OP)

Function:	Order Completion Intervals
<b>Business Implications:</b>	<p>In order to be successful in the marketplace, CLECs must be capable of delivering service in time frames equal to or better than what the ILEC delivers for comparable service configurations. Likewise, when the CLEC commits to a due date for service delivery, the customer plans for service availability have been established and the customer will be dissatisfied if the requested service or feature is not delivered when promised. The "average completion interval" measure monitors the time required by the ILEC to deliver integrated and operable service components requested by the CLEC, regardless of whether service resale or unbundled network elements are employed. When the service delivery interval of the ILEC is measured for comparable services, then conclusions can be drawn regarding whether or not CLECs have a reasonable opportunity to compete for customers. The "orders completed on time" measure monitors the reliability of ILEC commitments with respect to committed due dates to assure that CLECs can reliably quote expected due dates to their retail customer. In addition, when monitored over time, the "average completion interval" and "percent completed on time" may prove useful in detecting developing capacity issues. <u>The "Percent Customer Desired Due Date Met" measures the ILEC performance against what the CLEC customer requested versus the ILEC commitment made based on the ILECs own internal requirements which do not necessarily consider customer needs. The "Average Completion for INP Coordinated Orders" that involve Interim Number Portability (INP), and the "Percent of INP Coordinated Orders with Disconnection, Loop Provisioning, and NP done within 5 minutes of Each Other" monitor the quality of work done by the ILEC when physical connections and software updates must be completed at the same time to prevent customer outage and poor service. CLEC ability to receive quality Number Portability work is critical to their ability to compete in the marketplace.</u></p>
<b>Measurement Methodology:</b>	<p><b>Average Completion Interval</b> = <math>\Sigma [(Completion\ Date\ \&amp;\ Time) - (Order\ Submission\ Date\ \&amp;\ Time)] / (Count\ of\ Orders\ Completed\ in\ Reporting\ Period)</math></p> <p><b>Percent Orders Completed on Time</b> = <math>[(Count\ of\ Orders\ Completed\ within\ ILEC\ Committed\ Due\ Date) / (Count\ of\ Orders\ Completed\ in\ Reporting\ Period)] \times 100</math></p> <p><u><b>Percent Customer Desired Due Date Met</b> = <math>[(Count\ of\ Orders\ that\ met\ the\ Customer\ Desired\ Due\ Date) / (Count\ of\ Orders\ Completed\ in\ Reporting\ Period)] \times 100</math></u></p> <p><u><b>Average Completion for INP Coordinated Orders</b> = <math>\Sigma [(Completion\ Date\ and\ Time) - (Order\ Submission\ Date\ \&amp;\ Time)] / (Count\ of\ Orders\ Completed\ in\ Reporting\ Period)</math></u></p> <p><u><b>Percent of INP Coordinated Orders with Disconnection, Loop Provisioning, and NP done within 5 minutes of Each Other</b> = <math>[(Count\ of\ INP\ Coordinated\ Orders\ with\ Disconnection,\ Loop\ Provisioning,\ and\ NP\ done\ within\ 5\ minutes\ of\ each\ other) / (Count\ of\ INP\ Coordinated\ Orders\ with\ Disconnection,\ Loop\ Provisioning,\ and\ NP\ completed\ in\ Reporting\ Period)] \times 100</math></u></p>



# Service Quality Measurements

<b>Measurement Methodology:</b>	<p><b>For CLEC Results:</b> The actual completion interval is determined for each order processed during the reporting period. The completion interval is the elapsed time from the ILEC receipt of a syntactically correct order from the CLEC to the ILEC's return of a valid completion notification to the CLEC. Elapsed time for each order is accumulated for each reporting dimension (see below). The accumulated time for each reporting dimension is then divided by the associated total number of orders completed within the reporting period.</p> <p>The percentage of orders completed on time is determined by first counting, for each specified reporting dimension, both the total numbers of orders completed within the reporting interval and the number of orders completed by the committed due date (as specified on the initial FOC returned to the CLEC). For each reporting dimension, the resulting count of orders completed no later than the committed due date is divided by the total number of order completed with the resulting fraction expressed as a percentage.</p> <p><b>For ILEC Results:</b> The ILEC computation is identical to that for the CLEC with the clarifications noted below.</p> <p><b>Other Clarifications and Qualification:</b></p> <ul style="list-style-type: none"> <li>• The elapsed time for an ILEC order is measured from the point in time when the ILEC customer service agent enters the order into the ILEC order processing system until the date and time reported by the ILEC installation personnel log actual completion of all work necessary to permit service initiation, whether or not the ILEC initiates customer billing at that point in time.</li> <li>• Results for the CLECs are captured and reported at the order level (e.g., unique PON).</li> <li>• The Completion Date is the date upon which the ILEC issues the Order Completion Notice to the CLEC.</li> <li>• If the CLEC initiates a supplement to the originally submitted order and the supplement reflects changes in customer requirements (rather than responding to ILEC initiated changes), then the order submission date and time will be the date and time of the ILEC receipt of a syntactically correct order supplement.</li> <li>• No other supplemental order activities will result in an update to the order submission date and time used for the purposes of computing the order completion interval.</li> <li>• See "Order Status" metric sheet for discussion of ILEC analogs receipt of a syntactically correct <u>order</u> and return of a valid completion notice.</li> <li>• Elapsed time is measured in hours and hundredths of hours rounded to the nearest tenth of an hour.</li> <li>• Because this should be a highly automated process, the accumulation of elapsed time continues through off-schedule, weekends and holidays.</li> </ul>
<b>Reporting Dimensions:</b> <ul style="list-style-type: none"> <li>• Service - Standard Service Groupings (See Appendix A)</li> <li>• Activity - Standard Order Activities (See Appendix A)</li> <li>• Geographic Scope</li> </ul>	<b>Excluded Situations:</b> <ul style="list-style-type: none"> <li>• Canceled orders</li> <li>• Initial Order when supplemented by CLEC</li> <li>• ILEC Orders associated with internal or administrative use of local services</li> </ul>

## Service Quality Measurements

Data Retained Relating To CLEC Experience:	Data Retained Relating To ILEC Performance:
<ul style="list-style-type: none"> <li>• Report Month</li> <li>• CLEC Order Number</li> <li>• Order Submission Date</li> <li>• Order Submission Time</li> <li>• Order Completion Date</li> <li>• Order Completion Time</li> <li>• Service Type</li> <li>• Activity Type</li> <li>• Geographic Scope</li> </ul>	<ul style="list-style-type: none"> <li>• Report Month</li> <li>• Average Order Completion Interval</li> <li>• Standard Error for the Order Completion Interval</li> <li>• Service Type</li> <li>• Activity Type</li> <li>• Geographic Scope</li> </ul>
<b>Performance Standard in Absence of ILEC Results:</b>	<p>If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete:</p> <ul style="list-style-type: none"> <li>• Unless otherwise noted, the order completion interval for installations that do not require a premise visit and do not require anything beyond software updates is 1 business day.</li> <li>• Unless otherwise noted, the order completion intervals for installations that involve a premise visit or physical work is three business days.</li> <li>• Installation Interval Exceptions: <ul style="list-style-type: none"> <li>• <u>The installation interval for INP Coordinated Orders with Disconnection, Loop Provisioning, and NP requires that all of these activities be completed within 5 minutes of each other.</u></li> <li>• UNE Platform (at least DS0 loop + local switching + common transport elements) installation interval is 1 business day whether or not premise work is required.</li> <li>• The installation interval for unbundled loops is always 1 business day.</li> <li>• UNE Channelized DS1 (DS1 unbundled loop + multiplexing) installation interval is within 2 business days.</li> <li>• Unbundled Switching Element installation interval is within 2 business days</li> <li>• DS0/DS1 Dedicated Transport installation interval is within 3 business days</li> <li>• All other Dedicated Transport installation interval is within 5 business days.</li> </ul> </li> <li>• The installation interval for all orders involving only feature modification is 5 hours, <u>unless otherwise noted.</u></li> <li>• <u>Unless otherwise noted,</u> Order completion interval for all disconnection orders is 1 business day.</li> </ul>

*Note: Pages 13-15 have been directly modified from the LCUG document Version 6.1. Changes are noted in Underlined Italics.*

# Service Quality Measurements

## Measurement Detail

### Network Performance (NP)

<b>Function:</b>	<b>Network Interconnection Performance</b>	
<b>Business Implications:</b>	The perceived quality of CLEC retail services, particularly when either ILEC services are resold or UNEs are employed, will be heavily influenced by the underlying quality of the ILEC performance. Interconnection with the ILEC network, whether for facilities or equipment, needs to be provided at a level of quality that is equal to that which the ILEC provides itself, a subsidiary, an affiliate, or any other party. The quality of CLEC service to customers is directly dependent on adequacy of trunking capacity within the ILEC network, and between the ILEC network and the CLEC network.	
<b>Measurement Methodology:</b>	<p><b>Percent Trunk Blockage = [(Busy Hour Overflow Count)/(Busy Hour Peg Count) during the Reporting Period] x 100</b></p> <p><b>For CLEC Results:</b> This metric is computed at the end of the reporting period. It looks at the busiest hour during the reporting period as defined by the highest peg count (call attempts on the trunk group). It then determines for that hour the count of overflow (those call attempts that were blocked due to inadequate trunking, trunks turned down due to maintenance, or other Network failures). It then computes the percentage of blocking for that busy hour. Percentage of blocking for trunk groups is monitored from the CLEC to the ILEC end office, CLEC to ILEC local tandem, and CLEC to ILEC Access tandem.</p> <p><b>For ILEC Results:</b> This metric is computed at the end of the reporting period. It looks at the busiest hour during the reporting period as defined by the highest peg count (call attempts on the trunk group). It then determines for that hour the count of overflow (those call attempts that were blocked due to inadequate trunking, trunks turned down due to maintenance, or other Network failures). It then computes the percentage of blocking for that busy hour. Percentage of blocking for trunk groups is monitored from ILEC end office to ILEC end office, ILEC end office to local tandem, and ILEC end office to access tandem.</p> <p><b>Other Clarifications and Qualifications:</b> Trunk Group sizing is based on the Engineering criteria of "Grade of Service" and often refers to the "Poisson Tables" to quantify levels of service (such as, P.01 GOS which translates into 1 in 100 blocked calls, or 1% blockage).</p>	
<b>Reporting Dimensions:</b>		<b>Excluded Situations:</b>
<ul style="list-style-type: none"> <li>• Grade of Service (See Appendix A)</li> <li>• Geographic Scope</li> </ul>		<ul style="list-style-type: none"> <li>• None</li> </ul>

## Service Quality Measurements

<b>Data Retained Relating to CLEC Experience:</b>		<b>Data Retained Relating to ILEC Performance:</b>	
<ul style="list-style-type: none"> <li>• Report Month</li> <li>• Reporting Dimension</li> <li>• Trunk Group Type</li> <li>• Trunk Group Designation Identifying "from and to" Points</li> <li>• Geographic Scope</li> </ul>		<ul style="list-style-type: none"> <li>• Report Month</li> <li>• Reporting Dimension</li> <li>• Trunk Group Type</li> <li>• Trunk group Designation Identifying "from and to" Points</li> <li>• Geographic Scope</li> </ul>	
<b>Performance Standard in Absence of ILEC Results:</b>		<p>If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then results related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete:</p> <ul style="list-style-type: none"> <li>• End office to End office .5% blockage</li> <li>• End office to Local tandem .5% blockage</li> <li>• End office to Access Tandem .5% blockage</li> <li>• Final trunk groups 1% blockage</li> </ul>	

# Service Quality Measurements

## Measurement Detail

### Emergency Services (ES)

Function:	Timeliness of Updating the Database
<b>Business Implications:</b>	<p>CLECs are committed to providing emergency services to their customers. ILECs historically “own” and control the 911 databases, which CLECs provide input to for their customers. Timely update of the 911/E911 database for customer location and telephone numbers included in the Automatic Location Identifier (ALI), is necessary in order that emergency services can be promptly dispatched to the proper location should an emergency occur. In addition, the selective router that determines which dispatch center is associated with each customer, must also be updated by the ILEC. Timeliness of these updates can indeed become a “life and death” situation as customers attempt to reach emergency help dialing 911/E911. For the aforementioned reasons, as well as the fact that States require CLECs to offer 911/E911 capability, it is important that ILEC Emergency Services databases be promptly updated to reflect CLEC customer information.</p>
<b>Measurement Methodology:</b>	<p><b>Mean Database Update Interval</b> = <math>\sum[(\text{Completion Date\&amp;Time}) - (\text{Update Submission Date\&amp;Time})] / (\text{Count of Updates Completed in Reporting Period})</math></p> <p><b>Percent Updates Completed within 24 Hours</b> = <math>[(\text{Count of Updates Completed within 24 Hours}) / (\text{Count of Updates Completed in Reporting Period})] \times 100</math></p> <p><b>For CLEC Results:</b> The actual completion interval is determined for each update processed during the reporting period. The completion interval is the elapsed time from the ILEC receipt of a syntactically correct update from the CLEC to the ILEC’s return of a valid completion notification to the CLEC. Elapsed time for each update is accumulated for each reporting dimension (see below). The accumulated time for each reporting dimension is then divided by the associated total number of updates completed within the reporting period.</p> <p>The percentage of updates completed on time is determined by first counting, for each specified reporting dimension, both the total numbers of updates completed within the reporting interval and the number of updates completed by the committed due date (as specified on the initial FOC returned to the CLEC). For each reporting dimension, the resulting count of updates completed no later than the committed due date is divided by the total number of updates completed with the resulting fraction expressed as a percentage.</p> <p><b>For ILEC Results:</b> The ILEC computation is identical to that for the CLEC with the clarifications noted below.</p>

# Service Quality Measurements

<b>Measurement Methodology:</b>	<b>Other Clarifications and Qualification:</b> <ul style="list-style-type: none"> <li>• The elapsed time for an ILEC update is measured from the point in time when the ILEC customer service agent enters the order into the ILEC order processing system until the date and time reported by the ILEC that 911/E911 updates are completed.</li> <li>• Results for the CLECs are captured and reported at the update level by Reporting Dimension (see below).</li> <li>• The Completion Date is the date upon which the ILEC issues the Update Completion Notice to the CLEC.</li> <li>• If the CLEC initiates a supplement to the originally submitted update and the supplement reflects changes in customer requirements (rather than responding to ILEC initiated changes), then the update submission date and time will be the date and time of the ILEC receipt of a syntactically correct update supplement.</li> <li>• No other supplemental update activities will result in a change to the update submission date and time used for the purposes of computing the update completion interval.</li> <li>• Elapsed time is measured in hours and hundredths of hours rounded to the nearest tenth of an hour.</li> <li>• Because this should be a highly automated process, the accumulation of elapsed time continues through off-schedule, weekends and holidays.</li> </ul>
<b>Reporting Dimensions:</b> <ul style="list-style-type: none"> <li>• Customer address</li> <li>• Customer telephone number</li> <li>• Customer Selective Router</li> <li>• Geographic Scope</li> </ul>	<b>Excluded Situations:</b> <ul style="list-style-type: none"> <li>• Updates Canceled by the CLEC</li> <li>• Initial update when supplemented by CLEC</li> <li>• ILEC updates associated with internal or administrative use of local services</li> </ul>
<b>Data Retained Relating to CLEC Experience:</b> <ul style="list-style-type: none"> <li>• Report Month</li> <li>• CLEC Update Number</li> <li>• Update Submission Date</li> <li>• Update Submission Time</li> <li>• Update Completion Date</li> <li>• Update Completion Time</li> <li>• Reporting Dimension</li> <li>• Geographic Scope</li> </ul>	<b>Data Retained Relating to ILEC Performance:</b> <ul style="list-style-type: none"> <li>• Report Month</li> <li>• Average Update Completion Interval</li> <li>• Reporting Dimension</li> <li>• Geographic Scope</li> </ul>
<b>Performance Standard in Absence of ILEC Results:</b>	<p>If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete:</p> <ul style="list-style-type: none"> <li>• The update interval is always within 24 hours.</li> </ul>

# Service Quality Measurements

## Measurement Detail

<b>Function:</b>	<b>Accuracy of Database</b>
<b>Business Implications:</b>	<p>Due to the emergency nature of dealing with 911/E911 databases, the business implications of ensuring that databases be both updated promptly and updated accurately, are similar. CLECs are committed to providing emergency services to their customers. ILECs historically "own" and control the 911 databases, which CLECs provide input to for their customers. Timely and accurate update of the 911/E911 database for customer location and telephone numbers included in the Automatic Location Identifier (ALI), is necessary in order that emergency services can be promptly dispatched to the proper location should an emergency occur. In addition, the selective router that determines which dispatch center is associated with each customer, must also be updated by the ILEC. Timeliness and accuracy of these updates can indeed become a "life and death" situation as customers attempt to reach emergency help dialing 911/E911. For the aforementioned reasons, as well as the fact that States require CLECs to offer 911/E911 capability, it is important that ILEC Emergency Services databases be accurately updated to reflect CLEC customer information.</p>
<b>Measurement Methodology:</b>	<p><b>Percent Database Accuracy = <math>\frac{[(\text{Count of Updates Completed w/o error})/(\text{Count of Updates Completed})] \times 100}{}</math></b></p> <p><b>For CLEC Results:</b> For each update completed during the reporting period, the original update that the CLEC sent to the ILEC is compared to the customer address and telephone number reflected in the database following completion of the update in the ALI by the ILEC. In addition, the "selective router" must be updated by the ILEC at the same time, to ensure that the correct dispatch center is entered for each telephone number. An update is "completed without error" if all updates and changes (as determined by comparing the original and the post update completion, and the Selective Router table) completely and accurately reflect the activity specified on the original and supplemental CLEC updates and proper selective router. "Total number of updates completed" refers to update completions received by the CLEC from the ILEC for each reporting dimension identified below.</p> <p><b>For ILEC Results:</b> Same computation as for the CLEC with the clarifications noted below.</p> <p><b>Other Clarifications and Qualification:</b></p> <ul style="list-style-type: none"> <li>• <b>Update Supplements</b> - If the CLEC initiates any supplements to the originally submitted update, for the purposes of reflecting changes in customer requirements, then the cumulative effect of the initial update and all the supplemental updates will be determined by comparison of the pre- and post update completions.</li> <li>• <b>Completion Notices</b> - To the extent that the ILEC supplies a completion notice containing sufficient information to perform validation of database update accuracy, then the Completion Notice information can be utilized in lieu of the comparison of the "before" and "after" views. Use of the completion notice for this purpose would need to be at the mutual agreement of the ILEC and the CLEC.</li> <li>• <b>All Updates</b> - The comparison is between the CLEC update and the database as it existed before and after completion.</li> </ul>

## Service Quality Measurements

<b>Measurement Methodology:</b>	<ul style="list-style-type: none"> <li>Sampling may be utilized to establish database update accuracy provided the results produced are consistent with the reporting dimensions specified, the sample methodology is disclosed in advance and reflects generally accepted sampling methodology, and the sampling process may be audited by the CLEC.</li> </ul>	
<b>Reporting Dimensions:</b>		<b>Excluded Situations:</b>
<ul style="list-style-type: none"> <li>Customer Address</li> <li>Customer Telephone number</li> <li>Customer Selective Router</li> <li>Geographic Scope</li> </ul>		<ul style="list-style-type: none"> <li>Updates canceled by the CLEC</li> <li>Initial update when supplemented by CLEC</li> <li>ILEC updates associated with internal or administrative use of local services</li> </ul>
<b>Data Retained Relating to the CLEC Experience:</b>		<b>Data Retained Relating to ILEC Performance:</b>
<ul style="list-style-type: none"> <li>Report Month</li> <li>CLEC Update Number</li> <li>Percent database update accuracy</li> <li>Reporting Dimension</li> <li>Geographic Scope</li> </ul>		<ul style="list-style-type: none"> <li>Report Month</li> <li>Percent database update accuracy</li> <li>Reporting Dimension</li> <li>Geographic Scope</li> </ul>
<b>Performance Standard in Absence of ILEC Results:</b>	<p>If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete:</p> <p>Completed CLEC updates, by reporting dimension, are accurate no less than 99.9% of the time.</p>	



# Service Quality Measurements

## Measurement Detail

<b>Function:</b>	<b>Provisioning of 911/E911 Trunks</b>
<b>Business Implications:</b>	CLECs cannot offer Local Exchange Service without a 911/E911 capability. In order for CLEC customers to be able to access the ILEC 911/E911, ILEC office trunk facilities need to be installed in a timely fashion. They also need to be provided in a quantity to minimize the risk of trunk blockage, which could prevent critical emergency call attempts from reaching 911. CLEC Customers need to be able to access the ILEC 911/E911 office on the first try due to the nature of their emergency situations.
<b>Measurement Methodology:</b>	<p><b>Mean Interval to Provision 911/E911 Trunks</b> = <math>\sum[(\text{Completion Date and Time}) - (\text{Trunk Order Submission Date and Time})]/(\text{Number of 911/E911 Trunks Completed in Reporting Period})</math></p> <p><b>Percent Trunks Completed within 15 Days</b> = <math>[(\text{Count of Trunks completed within 15 Days})/(\text{Count of Trunks Completed in Reporting Period})] \times 100</math></p> <p><b>Percent Trunk Blockage</b> = <math>[(\text{Busy Hour Overflow Count})/(\text{Busy Hour Peg Count}) \text{ during Report Period}] \times 100</math></p> <p><b>For CLEC Results:</b> The "Mean Interval to Provision 911/E911 Trunks" monitors how long it takes the ILEC to add trunks, utilized by CLEC customers, to improve capacity incoming to the ILEC 911/E911 office. The actual completion interval is determined for each trunk added during the report period. The completion interval is the elapsed time from receipt of a request from the CLEC (or from creation of the trunk order by the ILEC, if self-initiated), until return of a valid completion notification to the CLEC. The accumulated time is then divided by the associated total number of 911/E911 incoming trunks added within the report period.</p> <p>The "Percent Trunks Completed within 15 days" monitors the ILEC ability to respond within 15 days to add trunks, utilized by CLEC customers to access the ILEC 911/E911 office. The percentage of trunks added in 15 days is determined by first counting, both the total numbers of 911/E911 trunks completed within the reporting interval and the number of 911/E911 trunks completed within 15 days. (as specified on the on the completion notification returned to the CLEC). The resulting count of trunks completed no later than 15 days is divided by the total number of 911/E911 trunks completed with the resulting fraction expressed as a percentage.</p>

# Service Quality Measurements

<b>Measurement Methodology:</b>	<p>The "Percent (911/E911) Trunk Blockage" monitors overflow situations during the busiest hour of the Reporting Period for those trunk groups accessed by CLEC customers to reach the ILEC 911/E911 office. This metric is computed at the end of the reporting period. It looks at the busiest hour during the reporting period as defined by the highest peg count (call attempts on the trunk group). It then determines for that hour the count of overflow (those call attempts that were blocked due to inadequate trunking, trunks turned down due to maintenance, or other Network failures). It then computes the percentage of blocking for that busy hour. Percentage of blocking for trunk groups is monitored from the CLEC to the ILEC 911/E911 office.</p> <p><b>For ILEC Results:</b> the ILEC computation is identical to that for the CLEC with the clarifications noted below.</p> <ul style="list-style-type: none"> <li>• Elapsed time is measured in days, hours and hundredths of hours rounded to the nearest tenth of an hour.</li> <li>• Because this should be a highly automated process, the accumulation of elapsed time continues through off-schedule, weekends and holidays.</li> <li>• Percentage of blocking for trunk groups is monitored from the ILEC end office to ILEC 911/E911 office and from the ILEC tandem to the ILEC 911/E911 office.</li> </ul>
<b>Reporting Dimensions:</b> <ul style="list-style-type: none"> <li>• 911/E911 Incoming Trunk Adds</li> <li>• 911/E911 Incoming Trunk Groups</li> <li>• Grade of Service (see Appendix A)</li> </ul>	<b>Excluded Situations:</b> <ul style="list-style-type: none"> <li>• None</li> </ul>
<b>Data Retained Relating to CLEC Experience:</b> <ul style="list-style-type: none"> <li>• Report Month</li> <li>• Reporting Dimensions</li> <li>• 911/E911 Trunk Order Submission Date</li> <li>• 911/E911 Trunk Order Submission Time</li> <li>• 911/E911 Trunk Order Completion Date</li> <li>• 911/E911 Trunk Order Completion Time</li> <li>• Trunk Group Designation Identifying "to and from" points</li> <li>• Geographic Scope</li> </ul>	<b>Data Retained Relating to ILEC Performance:</b> <ul style="list-style-type: none"> <li>• Report Month</li> <li>• Average 911/E911 Trunk Order Completion Interval</li> <li>• Reporting Dimensions</li> <li>• Geographic Scope</li> </ul>
<b>Performance Standard in Absence of ILEC Results:</b>	<p>If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete:</p> <ul style="list-style-type: none"> <li>• 911/E911 incoming trunk adds completed within 15 days</li> <li>• Trunk blockage on 911/E911 incoming trunk groups at .5% or less</li> </ul>

# Service Quality Measurements

## Measurement Detail

<b>Function:</b>	<b>System Availability to the MSAG (Master Street Access Guide)</b>
<b>Business Implications:</b>	The 911/E911 capability works properly when, after having dialed "911", a customer calling into the Dispatch Center, can accurately have their telephone number associated with the correct street address, and thus receive dispatched help quickly. CLECs need the addresses contained in the MSAG, under the jurisdiction of the ILEC, to be able to associate the correct address with each telephone number. Fast response time in obtaining MSAG information is important in order that the appropriate 911/E911 databases can be updated promptly and accurately.
<b>Measurement Methodology:</b>	<p><b>Percent MSAG System Availability = [(Hours MSAG is Available to CLECs During Reporting Period)/(Number of Hours MSAG was Scheduled to be Available During Reporting Period)] x 100</b></p> <p><b>For CLEC Results:</b> The total "number of hours MSAG was scheduled to be available" is the cumulative number of hours (by date and time on a 24 hour clock) over which the ILEC planned to offer and support CLEC access to ILEC OSS functionality during the reporting period. The ILEC must provide a minimum advance notice of one reporting period regarding availability plans and such plans must be interface-specific. If scheduled availability is not provided with at least one report period advance notice then the default availability for the subsequent reporting period will be seven days per week, 24 hours per day.</p> <p>"Hours Functionality is Available" is the actual number of hours, during scheduled available time, that the ILEC gateway or interface is capable of accepting CLEC transactions or data files for processing in the gateway / interface and MSAG OSS(Operaton Support System).</p> <p>The actual time available is divided by the scheduled time available and then multiplied by 100 to produce the "Percent MSAG system availability" measure.</p> <p><b>For ILEC Results:</b> The "available time" and "scheduled available time" is gathered for the MSAG ILEC OSS during the report period. The MSAG ILEC OSS availability is computed based upon the weighted average availability. That is, the available time for the MSAG is accumulated over the report period and then divided by the summation of the scheduled available time for the MSAG.</p> <p><b>Other Clarifications and Qualifications:</b></p> <ul style="list-style-type: none"> <li>• Parity exists if the CLEC "Percent MSAG System Availability " is equal to or better than ILEC MSAG System Availability.</li> <li>• "Capability of accepting" must have a meaning consistent with the ILEC definition of "down time", whether planned or unplanned, for internal ILEC systems having a comparable potential for customer impact.</li> <li>• Time is measured in hours and tenths of hours rounded to the nearest tenth of an hour.</li> </ul>

## Service Quality Measurements

<b>Reporting Dimensions:</b>		<b>Excluded Situations:</b>	
<ul style="list-style-type: none"> <li>• Business Periods (8:00AM to 8:00PM local time versus Off-Hours 8:00PM to 8:00AM, weekends and Holidays)</li> <li>• Geographic Scope</li> </ul>		<ul style="list-style-type: none"> <li>• None</li> </ul>	
<b>Data Retained Relating to CLEC Experience:</b>		<b>Data Retained Relating to ILEC Performance:</b>	
<ul style="list-style-type: none"> <li>• Report Month</li> <li>• Scheduled Hours Available</li> <li>• Actual Hours Available</li> <li>• Percent MSAG CLECAvailability</li> </ul>		<ul style="list-style-type: none"> <li>• Report Month</li> <li>• Scheduled Hours Available</li> <li>• Actual Hours Available</li> <li>• Percent MSAG ILEC Availability</li> </ul>	
<b>Performance Standard in Absence of ILEC Results:</b>		<p>If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete:</p> <ul style="list-style-type: none"> <li>• Less than 0.1% of unplanned down time, by interface, during either business period .</li> </ul>	

# Service Quality Measurements

## Measurement Detail

### Collocation Provisioning (CP)

<b>Function:</b>	<b>Physical and Virtual Collocation Commitments Met</b>
<b>Business Implications:</b>	<p>Due to the natural evolution of local telephone services over the years, ILECs own, rent, or lease buildings in most cities and towns. Many of these buildings house ILEC Central Office switches and equipment, giving them an advantage in the immediate marketplace. These same buildings often have extra space, due to technology compressing the size of equipment over time. In order to be able to compete and to install necessary equipment to do so, CLECs need access to space available in ILEC buildings or remote locations. ILECs need to respond in a timely fashion to CLEC requests. Delays will prevent the CLEC from serving customers, and thereby threaten to prevent meaningful competition in the marketplace.</p>
<b>Measurement Methodology:</b>	<p><b>Mean Response to Request Interval</b> = <math>\sum[(\text{Request Response Date\&amp;Time}) - (\text{Request Submission Date\&amp;Time})]/(\text{Count of Requests Submitted in Reporting Period})</math></p> <p><b>Percent Responses Received within 5 Business Days</b> = <math>[(\text{Count of Responses received within 5 Business Days})/(\text{Count of Requests Submitted in Reporting Period})] \times 100</math></p> <p><b>Percent Physical Commitments Met</b> = <math>[(\text{Count of Physical Commitments Met})/(\text{Count of Physical Commitments in Reporting Period})] \times 100</math></p> <p><b>Percent Virtual Commitments Met</b> = <math>[(\text{Count of Virtual Commitments Met})/(\text{Count of Virtual Commitments in Reporting Period})] \times 100</math></p> <p><b>For CLEC Results:</b> The response interval for each space request is determined by computing the elapsed time from the ILEC receipt of a space request from the CLEC, to the time the ILEC returns the requested information to the CLEC. Elapsed time is accumulated for each space request, consistent with the specified reporting dimension, and then divided by the associated total number of space requests received by the ILEC during the report period.</p> <p>The "Percent Responses Received within 5 Business Days" is determined by first counting, for each specified reporting dimension, both the number of space request responses (via FOCs, Firm Order Confirmation Notices) received within 5 business days, and the number of space requests submitted in the reporting period. For each reporting dimension, the resulting count of space responses received within 5 business days, is divided by the number of space requests submitted in the reporting period and expressed as a percentage.</p>

## Service Quality Measurements

<b>Measurement Methodology:</b>	<p>The "Percent Physical Commitments Met" is determined by first counting, for each specified reporting dimension, both the number of commitments met, and the number of commitments made (via FOCs) in the reporting period. For each reporting dimension, the resulting count of commitments met, is divided by the number of commitments made in the reporting period and expressed as a percentage. The same methodology applies to "Percent Virtual Commitments Met".</p> <p><b>For ILEC Results:</b> The ILEC computation is identical to that for the CLEC with the clarifications noted below:</p> <p><b>Other Clarifications and Qualifications:</b></p> <ul style="list-style-type: none"> <li>• Elapsed time is measured in days and hours.</li> </ul>
<b>Reporting Dimensions:</b> <ul style="list-style-type: none"> <li>• FOC for Request of Collocation Space</li> <li>• FOC Commitment for Construction start</li> <li>• FOC Commitment for Interconnection to ILEC</li> <li>• By ILEC Central Office or Remote location</li> <li>• Geographic Scope</li> </ul>	<b>Excluded Situations:</b> <ul style="list-style-type: none"> <li>• CLEC cancellations</li> </ul>
<b>Data Retained Relating to CLEC Experience:</b> <ul style="list-style-type: none"> <li>• Report Month</li> <li>• Request Identifier (e.g., unique tracking number)</li> <li>• Request receipt by ILEC, date and time</li> <li>• Request type (per reporting dimension)</li> <li>• Response Date and Time</li> <li>• Commitments made for Physical or Virtual Collocation Construction start</li> <li>• Commitments Met for Physical or Virtual Collocation Construction start</li> <li>• Commitments made for Physical or Virtual ILEC Collocation Interconnection</li> <li>• Commitments Met for Physical or Virtual ILEC Collocation Interconnection</li> <li>• Geographic Scope</li> </ul>	<b>Data Retained Relating to ILEC Performance:</b> <ul style="list-style-type: none"> <li>• Report Month</li> <li>• Request type (per reporting dimension)</li> <li>• Mean response interval</li> <li>• Geographic scope</li> </ul>
<b>Performance Standard in Absence of ILEC Results:</b>	<p>If the ILEC does not deliver direct comparative results or the ILEC has not produced benchmark levels based upon a verifiable study of its own operation as agreed to with the CLEC, then result(s) related to the CLEC operation should be provided according to the following levels of performance in order to provide the CLEC with a meaningful opportunity to compete:</p> <ul style="list-style-type: none"> <li>• Requests for space should be responded to within 5 business days.</li> <li>• Commitments Met should be equal to or better than 98%.</li> </ul>

# Service Quality Measurements

## Measurement Detail

### Appendix A: Reporting Dimensions

<b>Standard Service Groupings:</b>	Add to LCUG list: <ul style="list-style-type: none"><li>• ISDN Basic Rate (BRI)</li><li>• ISDN Primary Rate (PRI)</li><li>• Unbundled DS3 Loop</li><li>• Network Interface Device (NID)</li><li>• Direct Inward Dialing (DID)</li><li>• RCF (Remote Call Forwarding) for Ported Numbers</li><li>• Signaling System 7 (SS7)</li></ul>
<b>Standard Order Activities:</b>	Add to LCUG list: <ul style="list-style-type: none"><li>• Interim Number Portability (INP)</li></ul>
<b>Grade of Service:</b>	<ul style="list-style-type: none"><li>• Interoffice Trunk Groups</li><li>• Final Trunk Groups</li><li>• Tandem Trunk Groups</li><li>• End Office Trunk Groups</li><li>• 911/E911 Incoming Trunk Groups</li></ul>

# Service Quality Measurements

## Measurement Detail Appendix B: Glossary

### Add to LCUG Document Glossary:

- Completion:** A “completion” is the transaction that the ILEC sends to the CLEC to inform the CLEC that a requested order has been completed. It means that all necessary work associated with an order or work request is done to meet customer requirements. This will include ensuring that Intercept Announcements and all feature changes have been tested and activated.
- Grade of Service:** Trunk group sizing is based on the Engineering criteria of “Grade of Service” and often refers to the mathematical “Poisson Tables” to quantify levels of Service (such as, P.01 GOS which equates to 1 in 100 “blocked calls”, or 1% blockage).



# Service Quality Measurements

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